

50 CENTS

CONSTRUCTION

METHODS AND EQUIPMENT

November 1954



A MCGRAW-HILL
PUBLICATION

Always on the Double!

Shaves time from every cycle,
for lower costs



Bucket-rocking
action
for faster loading

Four-wheel
drive
for sure-footed
traction

Torque
converter
for smooth flow
of power

LE ROI-TRANSO TLF-150 Front-end Loader

YES, sir, a $1\frac{1}{2}$ -yard Le Roi-Transo TLF-150 lets you move more load — faster — at lower cost — without tire spin or undue engine strain — in sand, mud, snow, or rocky terrain. It's engineered that way.

But that's only part of the Le Roi-Transo story. There are other important advantages.

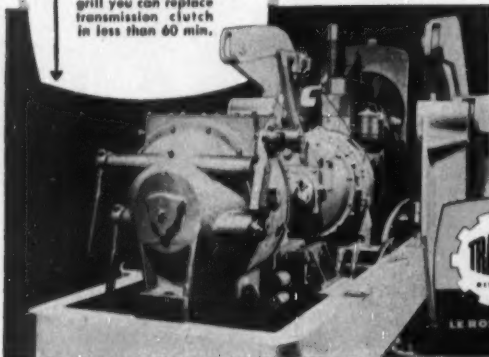
Take maneuverability, for example. The TLF-150 has power steering, short (84") wheelbase, short over-all length, and a small turning radius — so it's easy to handle. Planetary-type, reversing transmission cuts reversing time 85%. The low carrying position of the bucket gives you especially good vision and provides an extra margin of safety.

And when it comes to maintenance, the TLF-150 is built to save you time and money. Engine, transmission, clutches, axle assembly, and torque converter are grouped compactly and are easy to get at.

There are even more reasons why a Le Roi-Transo TLF-150 more than pays its way on material-handling jobs. See for yourself — have your Le Roi-Transo distributor arrange a demonstration.

Write for latest bulletin.

Note how compact arrangement of transmission, clutches, and torque converter puts transfer case conveniently at rear, so by merely removing the rear grill you can replace transmission clutch in less than 60 min.



LE ROI COMPANY

A Subsidiary of Westinghouse Air Brake Co.

TRANSO DIVISION

MILWAUKEE 14, WISCONSIN

TS-16

Plants: Milwaukee • Cleveland • Greenwich • Dunkirk, Ohio • Coldwater, Mich.

B.F. Goodrich



Tires roll from pit to plant on rock-strewn roads, defy cuts!

THE roads that connect the mining pits with the Charleson Iron Mining Company's plant at Virginia, Minn., are covered with chunks of abrasive rock and stone. Trucks roll over these roads 24 hours a day, 7 days a week, carrying 17-ton payloads.

Tire mortality could be high. This company uses B. F. Goodrich Universal tires, reports they defy rock cuts.



TONS OF ROCK crash onto B. F. Goodrich Universal tires that will carry the load up steep hauling roads to the plant. BFG makes a complete line of off-the-road tires.

All-Nylon cord body

They wear longer, too, because Universal tires, size 12.00 and larger, are built with an all-nylon cord body. Nylon is stronger than ordinary cord materials, withstands double the impact, resists heat blowouts and flex breaks.

Under the tread is the B. F. Goodrich nylon shock shield. Layers of strong



CHARLESON'S TIRES are 95% B. F. Goodrich, preferred because the specially-compounded tread defies rock cuts, gives outstanding traction compared to other rock-type tires.

nylon cords stretch together to absorb and distribute impacts, protect the tire body from shocks and bruises. This means Universal tires wear longer, can be recapped more times. You pay nothing extra for this patented B. F. Goodrich nylon shock shield.

See all-nylon tires today at your B. F. Goodrich retailer's (smaller sizes in all-nylon or rayon construction). The address is listed under Tires in the Yellow Pages of your phone book. Or write The B. F. Goodrich Company, Tire & Equipment Division, Akron 18, Ohio.

Specify B. F. Goodrich tires when ordering new equipment





SPEED UP IGNITION REPAIRS WITH A WICO magneto overhaul PACKAGE

The essential parts for a thorough, long-lasting magneto overhaul are contained in Wico's new XH magneto overhaul package. When you use the complete package, you get a thorough magneto overhaul. All the necessary, factory-made parts for each repair are right at hand—in one package, under one number, at one price. Besides insuring better repairs, the package saves time spent looking for parts, looking up part numbers, figuring out prices. Time saved this way means your engine is back on the job fast, repair costs are lower, profits are up.

CONSTRUCTION EQUIPMENT ignition repairs last longer when a Wico XH magneto overhaul package is used. Package contains all necessary XH magneto parts for thorough, long-lasting repairs: condenser and contact set, gaskets, screws, breaker arm lock, oil seal, slinger, bushing.
ORDER PKG. NO. K-9358.



WICO ELECTRIC

Box 511 West Springfield, Mass.

Gentlemen:
I can use XH Magneto Overhaul Package No. K9358. Rush me name of distributor nearest me.

NAME

COMPANY

ADDRESS

Volume 36
Number 11

CONSTRUCTION METHODS

Established
1919

AND EQUIPMENT

November 1954

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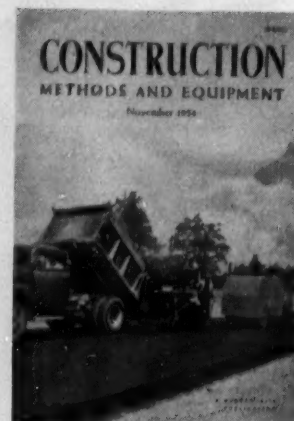
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On the Cover

Putting down black top on the Atlanta-Griffin Expressway in Georgia. The 24-ft road gets a 6-in. base of soil-bound macadam, 3 in. of bituminous-bound penetrator, 3 in. of binder course and 1½ in. of Type E top. Huber 8 to 12-ton tandem roller seals and backrolls behind Barber-Greene paver being supplied by a Ford truck with Marion body. Contractor is E Jack Smith Co. of Atlanta.

REPRINTS ON LABOR RELATIONS: You can get reprints of CM&E's valuable three-part series of articles entitled, "How to Improve Contractor-Labor Relations," by writing to the Editor at 330 W. 42 St., New York 36, N. Y. The articles tell what contractors can do to gain good will and eliminate many work stoppages. Unions also speak their piece, and there are many good tips to help job supers. Single copies, 15c; 10 or more, 10c each.

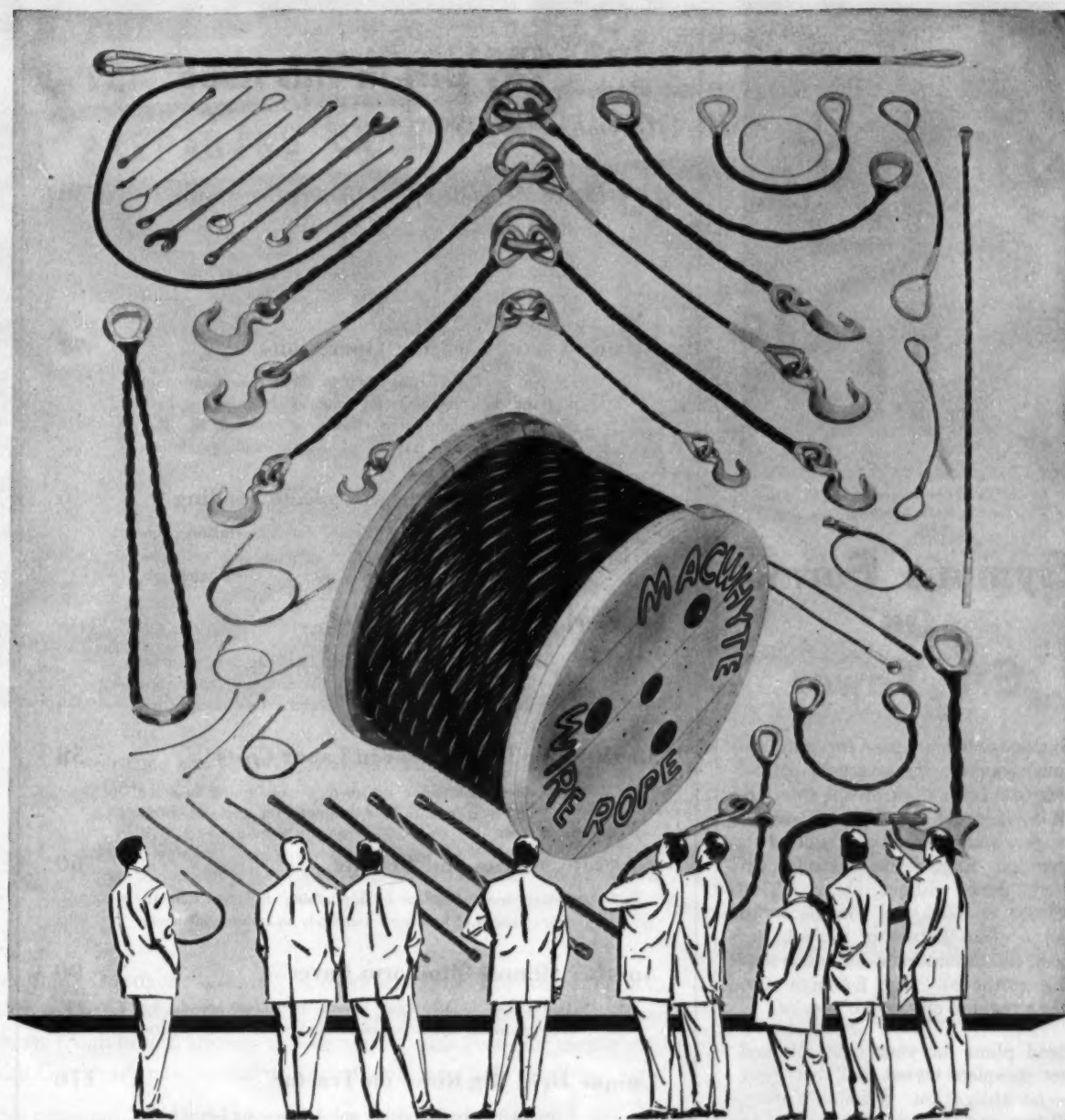
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1040




Intake Tower, Kaw Power Station, Kansas City, Kansas, R. G. Aldridge, Gen. Con.

Symons Forms On 64' Tower

Symons forms are used for architectural concrete on exterior and for intricate form work on the interior. Many corbels, inserts, buttresses, ladders and other details required on this job. Engineering for all form work done without charge. This service enabled the contractor to get a clear picture of his job (its cost, bill of materials and labor saving methods). Our fieldman also gave regular on-the-job service.

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Pay Dirt in This Issue

November, 1954

Floating-In Methods Speed Bridge Erection 50

Bridge builders continue to find new opportunities to cut superstructure costs by floating-in preassembled spans. Three big jobs show how contractors use tide, water ballasting, and jacks to set the steel units.

Balanced Land-Clearing Operations 74

Efficient work units, made up of the proper number of men and the right kind and numbers of equipment, have proved to be the key to clearing a reservoir site that presented a wide variety of terrain and vegetation.

Asphalted Straw Mulches Roadside Seeding 56

Erosion control of West Virginia Turnpike embankments was laid down and banks seeded before paving was done. Right ingredients and special machines do a quick job.

Settle That Dispute Out of Court 106

A plan to settle disputes that pop up on construction jobs. You can avoid lengthy court entanglements, get final decisions quickly and it's inexpensive.

Single-Slope Liner Saves in Labor Costs 58

A Western contractor designed a canal-lining machine easy to move, operate, and adaptable to any size ditch.

Concrete Mixing and Placing 60

Second installment on form planning discusses ties, anchors, classes of formwork and loads on framing members.

Another Illinois Slip-Form Paver 90

The latest in slip-form pavers is self-propelled, has crawler tracks operating inside forms for better control.

Unique Drill Rig Rides on Tractor 116

Contractor makes big mobile unit by mounting 4-drill frame on the front of a tractor and two compressors on back.

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NEXT MONTH

Yet another method of laying concrete pavement is being used successfully by an Ohio Turnpike contractor. All batching and mixing are done in a central plant. Delivery and placing between the forms is with a fleet of Dumpcretes. Paving goes on day and night on well-lighted job.

WATER AND RUBBER JOIN FORCES

PREPARING SITE FOR 6,500,000-YARD DAM!



**GOODYEAR
WAS THERE!**

THEY TOOK A TIP FROM THE FORTY-NINERS at Cherry Valley Dam, now rising in California's Sierras — far much of the overburden clung to slopes too steep for equipment. So they washed it down into the valley with high-pressure water jets, which also were used to wash out fines (as shown above). Then crawlers and the following rubber-tired equipment took over—15 scrapers, 35 haulers, 3 water trucks, 3 compactors, 14 pickups, 2 grease trucks, 3 flat-bed trailers and a couple of tank trucks. The mountain goats would hardly know the old place now!

You find "Goodyear is there" on more and more jobs where the going is rugged—and there's no time for down time. That's because Goodyears, always tough brutes, are now more enduring than ever—for they're made with Goodyear's new, exclusive, Triple-Tempered (3-T) cord!

This patented 3-T process keeps Nylon or Rayon cord at its most bruise-resistant, heat-resistant point. It controls tire growth, reduces tread and body failures to new LOWS—keeps tires in shape for *extra* re-lugs and recaps. Next time you buy or specify any type tire, remember *only* Goodyears have 3-T Cord! Goodyear, Truck Tire Dept., Akron 16, Ohio.



BIG TIRE STOCK PILE ON JOB speeds changes for inspection and maintenance.



HARD ROCK LUG

HARD ROCK RIB

ALL-WEATHER

SURE-GRIP

FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE!

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

And Remember
**NOTHING ELSE CAN
TAKE IT LIKE
3-T NYLON!**

Pick the right jack for the job

from the world's
MOST ADVANCED
line of hydraulic jacks



EXAMPLE: 50-ton model GB-11 fits into cramped quarters — is one-man operated. Note short handle. Following are other big features:



LIGHTNING LIFT — 30 and 50 ton models have a patented double pump. Only ONE pump beam. No shifting of the handle. Load is quickly contacted. Then the powerful load pump cuts in automatically.



PROTECTION — No accidental lowering — release valve is recessed in the base. Pumps are concealed — not exposed to damage.



GAUGE PLUG PROVIDED — It's easy to attach a gauge to measure the load on the jack — for testing, weighing, pressing to predetermined pressures.

**The MOST EXTRAS — and
the MOST COMPLETE line
— 1½ to 100-ton capacities**

Major jack users soon discover the completeness of Blackhawk's line means you can quickly get the *right* jack for the job. And their experience has proved that the most dependable, longest lasting hydraulic jacks are built by Blackhawk. What's more — after a long productive life — it's easier and less costly to replace worn parts on a Blackhawk and get it back in full action in a hurry.

**There are many reasons
for these long-range advantages**

- Over 50 well-equipped authorized repair stations assure repair service

whenever you need it.

- 68% of all replacement parts are now interchangeable among the most popular Blackhawk models
- New designs give Blackhawk Jacks even greater dependability

So — *standardize* on Blackhawk Jacks now. Order from leading supply houses everywhere

Get this **FREE "Idea Book"** See how others do cost cutting tricks with Blackhawk Jacks. Write for 64-page "Idea Book" and catalog, Blackhawk Mfg. Co., Dept. J-23114, Milwaukee 1, Wisconsin



BLACKHAWK®
HYDRAULIC EQUIPMENT • HAND TOOLS

★ JOB TALK ★

... About Methods



Payloader Becomes Housemover

Two small houses were moved with ease for about 1½ mi along the shores of Lake George in New York with Hough Payloaders. Contractor Howard LaRose supported the buildings on beams carried by dolly wheels at one end. The other end of the carry beams was supported by the payloador—which also furnished the motive power.

LaRose moved the first 28x14-ft building with the big Model HM. For the second one, he placed more of the building weight upon the four dolly wheels and then used the smaller HR Payloader to carry one end and pull the load along.

The story and pictures were sent to State Equipment Co., at Albany, New York distributor for Hough. State Equipment has been running a series of advertisements with humorous cartoons depicting construction equipment performing fabulous deeds. One such presented a Payloader carrying a building on its bucket. At about the same time real-life Payloaders were moving buildings, using their buckets.

Special Ripper Breaks Concrete

Heavily traveled West Liberty Avenue in Pittsburgh is being reconstructed one side at a time to keep the important artery open. City law bans the use of a headache ball to break paving, so the contractor, Allegheny Asphalt and Paving Company, Inc., used a tractor-mounted rock ripper instead—and gained an estimated 25% saving in time and cost.

Allegheny installed an ATECO extra-heavy duty hydraulically
(Continued on page 12)



NORTHWEST

TRUCK

CRANES

It is the machines in service that tell the story! The smoother handling of Northwest equipment, the many advantages of Northwest Carriers and Cranes, the ease of convertibility—these are just a few of the advantages that are putting Northwests in the hands of well-known companies on all kinds of work, everywhere!

Don't buy a Truck Crane without getting the full story on the Northwest.

NORTHWEST ENGINEERING CO.

1503 Field Bldg., 135 South La Salle St.

Chicago 3, Illinois

*They're
Everywhere!*

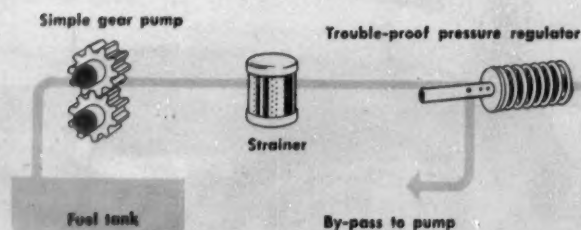
NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

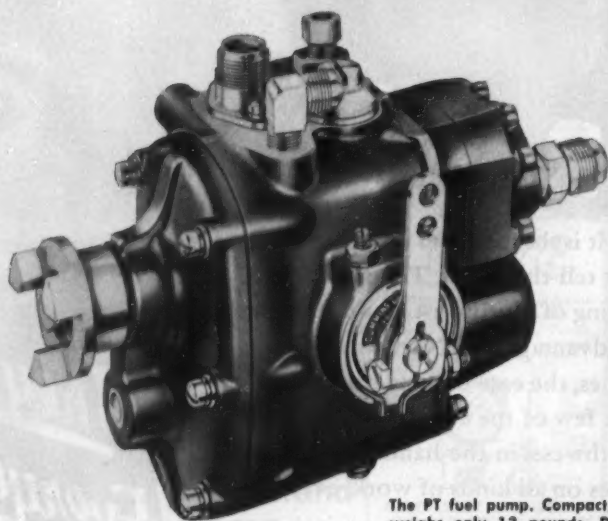


Here's the simplest diesel fuel system ever developed!

Simplest pump and fuel control arrangement



*Cummins new **PT** fuel system..*



The PT fuel pump. Compact, easy to handle, weighs only 13 pounds. Does not have to be timed to engine, quick and easy to install.



The PT injector utilizes the exclusive Cummins principle of fuel injection which has set the highest standards of performance and economy for more than 20 years.

THE revolutionary new PT fuel system, now standard on all Cummins Diesels, has fewer and far simpler parts than carburetor and ignition systems or ordinary diesel fuel systems. It is easy to understand, simple to work with, can be serviced by any mechanic. No longer any need for fuel system specialists! The PT fuel system has under-

gone two years of field testing and millions of operating miles under every conceivable condition. Its dependability record is phenomenal. Operators report even less fuel consumption than with earlier Cummins fuel systems and far less cost of maintenance. The PT fuel system can be installed on any Cummins Diesel built since 1932.

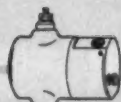
Cummins leader in lightweight high speed diesel power 60-600 h. p.



Throttle



Flyball governor



Solenoid shut-down

Injector



Return to fuel tank

PT advantages over gasoline systems:

- | | |
|-----------------------------|----------------------------|
| No contact points to adjust | No vapor-lock problems |
| No condenser to replace | No flooding |
| No spark coil to short | No choking or priming |
| No wiring harness to short | No needle valves to clog |
| No spark plugs | No butterfly valve |
| | No float level to maintain |
| | No float valve to stick |

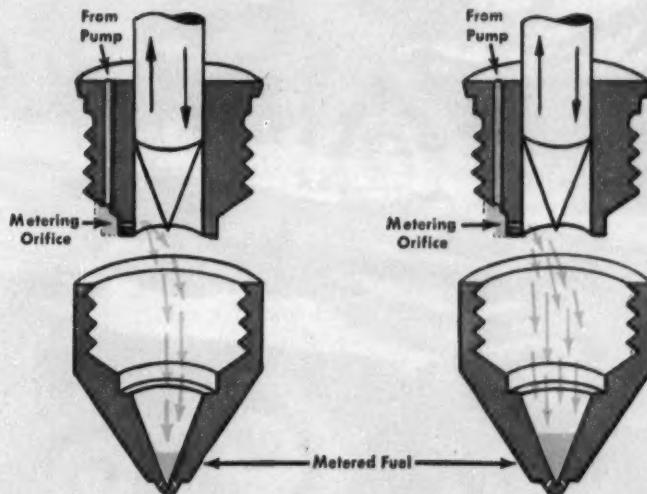
PT advantages over ordinary diesel systems:

- | | |
|--------------------------|-----------------------------|
| No fuel rack adjustments | No distributor discs |
| No check valves | No metering pumps |
| No needle valves | No high-pressure fuel lines |
| No helixes | No fuel pump timing |

... simpler to work with than gasoline carburetion and ignition

Simplest Fuel Metering Device

The principle is simply that the amount of fuel flowing through a fixed orifice varies according to the amount of pressure on the fuel. Pressure is controlled by the throttle on the PT pump. Fuel flow through orifice is cut off as injector plunger, actuated by engine camshaft, moves down to inject fuel.



When engine is under partial load, fuel pressure is low, and only a small amount of fuel passes through orifice into injector cup.

When engine is under full load, fuel pressure is increased, and greater amount of fuel passes through orifice into injector cup.

Mail this today, and get more PT facts!

CUMMINS

CUMMINS ENGINE COMPANY, INC.
Columbus, Indiana

DEPT. CM-11

Please send me free illustrated folder, "Cummins PT Fuel System."

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

OVER 15 YEARS OF LOW




TUNE IN...TEXACO
STAR THEATER
starring
DONALD O'CONNOR
or JIMMY DURANTE
on television...
Saturday nights, NBC.



TEXACO

MAINTENANCE COSTS

Reports Isbell Construction Company, Reno, Nevada



"WITH TEXACO MARFAK," reports the Isbell Construction Company, "we've enjoyed over 15 years of low maintenance costs and extra long chassis parts life. Our experience has shown that no matter how tough the terrain, *Texaco Marfak* stays in the bearings and really gives them protection against dirt and moisture."

Contractors everywhere get similar results with *Texaco Marfak*. It won't squeeze or jar out, stays in the bearings, effectively guards against wear and rust. It's top assurance of lower maintenance costs, longer bearing life.

In wheel bearings, use *Texaco Marfak Heavy Duty*. Isbell does and finds that it safeguards bearings for extra thousands of miles between repackings, increases bearing life, assures greater braking safety. No seasonal change required.

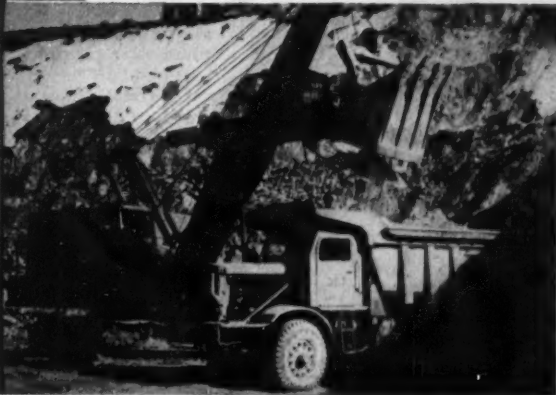
More than 500 million pounds of *Texaco Marfak* have been sold

For crawler tracks, *Texaco Track Roll Lubricant* is ideal. It wards off rust and wear—keeps out dirt and moisture.

Let a *Texaco Lubrication Engineer* help you step up your equipment efficiency, cut down on maintenance costs. Just call the nearest of the more than 2,000 *Texaco Distributing Plants* in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO SIMPLIFIED LUBRICATION PLAN

With not more than six *Texaco Lubricants* you can handle all your major lubrication. The plan saves time and money, reduces lubricant inventories, eliminates lubrication mistakes. Ask a *Texaco Lubrication Engineer* all about it.



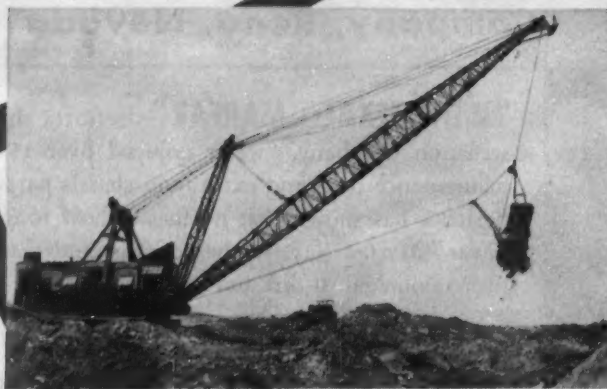
To keep its equipment on the job, and maintenance costs low, Isbell Construction Company—highway builder, open pit mining contractor—has been using *Texaco Products* for years.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

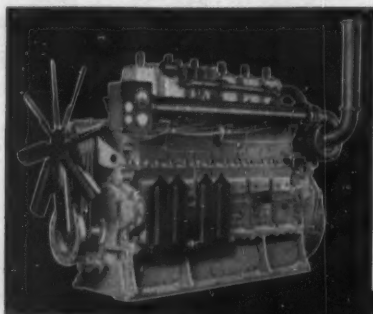
EXTRA HP

at lowest fuel cost!



Penbrook Contracting Corp., Camp Hill, Pa., use this Waukesha Turbocharged 2894 cu. in. Diesel powered 5W Bucyrus-Monaghan drag line with 6-yd. heavy-duty bucket and 125' boom for coal stripping and excavating.

turbocharged WAUKESHA Diesels



Turbo-Supercharged Waukesha LRDBS Diesel (above and right)—2894 cu. in., 8 1/2-in. bore and stroke; develops 570 hp max. at 1200 rpm; burns all standard "high speed fuels"—powers drag line (top) owned by Penbrook Contracting Corp.

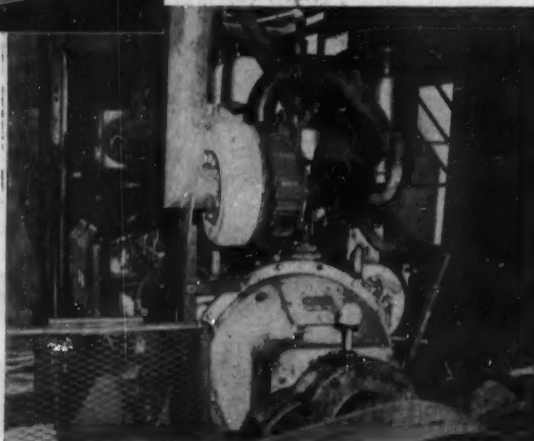
WAUKESHA ENGINES
and POWER UNITS
10 hp to 1100 hp

**WAUKESHA
MOTOR COMPANY**

Waukesha, Wisconsin
New York • Tulsa • Los Angeles

Mr. William E. Crum, President, Penbrook Contracting Corp. says: "One of the best engines we have ever owned." Outstanding characteristics of this big turbocharged Waukesha LRDBS Diesel are lively acceleration, clean burning, prompt starting, a tremendous reserve of power and great overall economy. Send for Bulletin 1606.

259



JOB TALK . . . Continued from page 6



controlled ripper, made by Greenville Steel Car Co., Greenville, Pa., on a Caterpillar D8, using only one of its three gooseneck standards to get maximum pressure at a single point. It was set to a ripping depth of 24 in. to get well under and pull upward on the old road, consisting of asphalt topping, some Belgian block, and a slab of concrete. Depth of the material varied from 10 to 20 in., but it was ripped out easily, and work in close quarters was possible because of the tractor-mounted equipment. Able to swivel 15 deg either way, the standard followed the tractor like a trailer and did not affect steering.

Slick and Quick

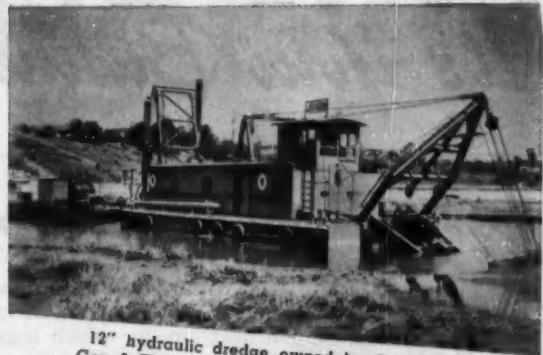
The E. & F. Construction Co., Inc., Bridgeport, Conn., moved an old concrete slab in a hurry recently. In preparing for a building addition for the Post Publishing Co., it was necessary to remove a concrete floor. Underneath was an excavated area, and the old slab could have been cut into chunks that dropped down—to be shoveled or clammed out later.

Instead, E.&F. "perforated" the floor into 10 or 12 large sections by cutting a series of small holes along section lines, leaving the slab hanging virtually by the reinforcing rods. Then lifting slings were passed around one slab section at a time and its steel bars burned off, as a crane took the load. As each slab section—measuring about 8x25 ft—was cut free, it was deposited on a truck-trailer and hauled away for disposal. Al Hawley, chief engineer of Fletcher, Thompson, Inc., architects and engineers, reports that the contractor figured out this neat removal method.

(Continued on page 20)



10" hydraulic dredge operating in Florida for the Indian River Mosquito Control District—installed Sept. 1954



12" hydraulic dredge owned by San Diego Gas & Electric Co.—installed February 1954

now

5 more dredging problems...

SOLVED



8" hydraulic dredge removing silt for the Salt River Valley Water Users' Association—installed June 1954



8" hydraulic dredge excavating gravel in Illinois for Rock River Ready Mix Co.—installed April 1954



FREE

Write for new
Dredge Catalog.



12" hydraulic dredge reclaiming land for the State of Ohio on Lake St. Marys—installed June 1954

Here's how five totally different dredging problems were solved by American Steel Dredge Company.

Each hydraulic dredge was especially designed for its specific job. American Steel Dredge standardized components permit our engineers to design a dredge which will meet exactly the requirements of each customer . . . a "custom dredge" at a "production price."

Since ASD dredges are located in all parts of the country, we invite you to ask these owners and operators about their outstanding performance. Their satisfaction is your guarantee of the World's Finest Hydraulic Dredge!

ASD can help solve your dredging problems on river, canal, lake improvement or drainage projects. Let us share with you our nearly half a century of dredge designing and manufacturing experience.

Write, wire or call for complete information.



AMERICAN STEEL DREDGE CO. INC.

DEPT. A • FORT WAYNE 1, INDIANA

It's Your Business . . .

Enough Contractor Capacity?

THAT \$50 BILLION HIGHWAY PROGRAM, proposed by President Eisenhower—\$50 billions, on top of the present \$40 billion program, for which highway officials are searching for new methods of financing—can contractors build that fast? have they the capacity? the equipment? the supervisory personnel?

Yes, says George C. Koss, vice-president, The Associated General Contractors of America, Inc., testifying before the President's Advisory Committee.

Mr. Koss cited the low prices that contractors are now bidding for work and the increasing numbers of bidders per project as evidence of the reserve capacity contractors have. Although this creates the present highly competitive situation, it constitutes an exceptionally favorable climate for starting such an enlarged program, and a good base for further contractor expansion.

How fast could the construction industry mobilize to expand present capacity? He asked AGC members. The majority who replied could double their capacity in two years. A few could handle immediately double volume with supervisory personnel and equipment already at hand. (See "It's Your Business," CM&E September, 1953 and August, 1954.) Replies to the new AGC query varied from an increase of 60% to 400% in two years, with the more conservative estimate coming from the states now having the biggest programs.

In five years contractors could—if they knew that a long-range program would be continued—increase their capacity to 400% of the present, with individual contractors reporting possible increases of from 100% to 1,000%.

In addition, companies now on other types of work and new firms would be attracted to a stabilized and continuing program of such magnitude.

To accomplish such a program most efficiently and economically, Mr. Koss made these recommendations:

1. The program should be on a 10-year basis and be carried out on an orderly schedule in each of those years at a known rate. Thus contractors could stay tuned up to peak efficiency and not tear down an efficient organization one year only to rebuild and tune up a new organization the next.

2. A complete highway between principal points of travel should be built in one operation and not one bit here, another bit there in disconnected sections. This would add to construction efficiency.

3. Right-of-way should be acquired in advance, before contracts for construction are let.

4. The present set-up of the Bureau of Public Roads and the state highway departments should be used to administer the program, the Bureau as a medium for achieving uniformity in standards and inter-state integration, and the states for achieving the same intra-state benefits.

5. The states should be encouraged to maintain engineering staffs qualified and large enough to administer an expanding program.

6. The principle should be continued that highway construction be handled by contract awarded to the lowest responsible bidder after public advertisement.

Competition—Effect on Bids and Bidders

Two marks of lively, even fierce, competition are lower bid prices and an increasing number of bidders per job. 1954 has produced both.

New figures from the Bureau of Public Roads show that low bids on federal aid highways throughout the country averaged from 12.2% in February to 9.4% in July under the engineer's estimates. In August they were 10.2% under. This confirms spot checks earlier that they were ranging from 5 to 30% below and averaging 10 to 15% below.

But the unit prices back of these bids are running below the contractor's own prices which were at their peak in late 1952 and early 1953. These prices are down 10% on a national average even though basic costs of labor and materials are up 9%. This is a wide and spreading gap.

State highway bid price indexes show considerable variation from this national average in the drop in prices. Colorado low bids are down 22.8% from their 1952 highs, Minnesota bids are down 17%, Nebraska 12.2%, Texas and Oregon 10% each, Connecticut 4.7%—all from 1952 highs. California low bids are down 15% from their 1951 peak, and Washington state bid prices are 10.5% below their 1953 top. The Bureau of Public Roads national composite mile bid-price index topped out in the first quarter of 1953 and is now 10.5% lower, based on second quarter, 1954 low bids.

The Bureau of Reclamation bid price index is 5% below its 1953 peak. But on a similar class of work the low bidders this month on the Table Rock Dam for the Corps of Engineers in Arkansas were 12.5% under the engineers' estimate "without profit."

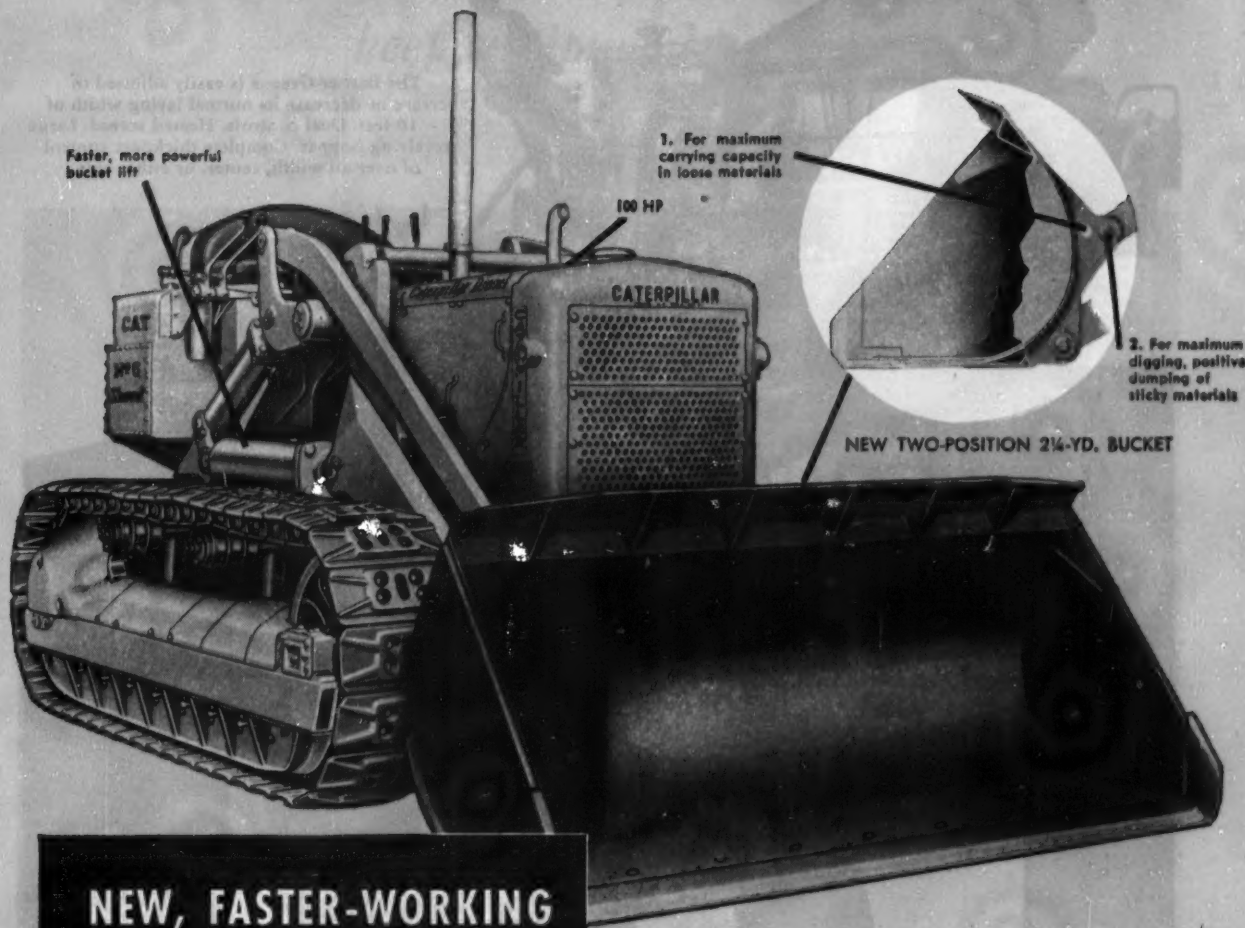
It is a great tribute to the good management and productivity of the construction industry that contractor failures have not to date been excessive or disastrous under such tight bidding.

The number of bidders has steadily increased. Again new figures from the Bureau of Public Roads give us a national average, up 80% in 8½ yr. Year by year this is the record:

NUMBER OF BIDDERS PER HIGHWAY PROJECT BY YEARS					
1946	3.9	1949	6.3	1952	5.0
1947	3.8	1950	6.0	1953	6.6
1948	4.2	1951	4.5	1954	7.0 (first half)

(Continued on page 24)

ANNOUNCING



NEW, FASTER-WORKING NO. 6 SHOVEL at no increase in price

NEW POWER—the CAT* Diesel Engine now gives you 100 HP, an increase of approximately 25 per cent—and you get it with Caterpillar ruggedness and economy.

NEW 2¼-yd. BUCKET gives you 12½ per cent more capacity, gets heaping loads, dumps cleanly. Exclusive two-position feature gives maximum use of bucket capacity in any material: rear position for clean, fast dumping of sticky materials; forward position for carrying heaping loads of loose materials.

GREATER LIFTING POWER and speed with new hydraulic pump: its pressure is stepped up more than 40 per cent for fast, positive lifting action under *all* load conditions.

These extra values cost you no more in price!

These useful attachments increase your job range: skeleton rock bucket, quarry bucket, heavy-duty narrow bucket and bulldozer blade.

Versatile new No. 6 Shovel is built to do more work at less cost

Weight distribution, engine horsepower and bucket capacity are carefully balanced so that the tracks *stay* on the ground for maximum stability.

Your Caterpillar Dealer will be glad to demonstrate the new No. 6 Shovel *on the job*. See him today. And count on him for fast service and genuine factory parts.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.



CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**



The Barber-Greene is easily adjusted to increase or decrease its normal laying width of 10 feet. Dual controls. Heated screed. Large receiving hopper. Complete thickness control of over-all width, center, or either side.

PAVE

PAVE profitably. **PAVE** with any mix, hot or cold.

PAVE with the tamper that compacts to uniform density.

PAVE with automatic leveling. **PAVE** with positive traction.

PAVE with permanent bond between strips.

Let us show you how the Barber-Greene Finisher can reduce your costs.

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AURORA, ILLINOIS, U.S.A.

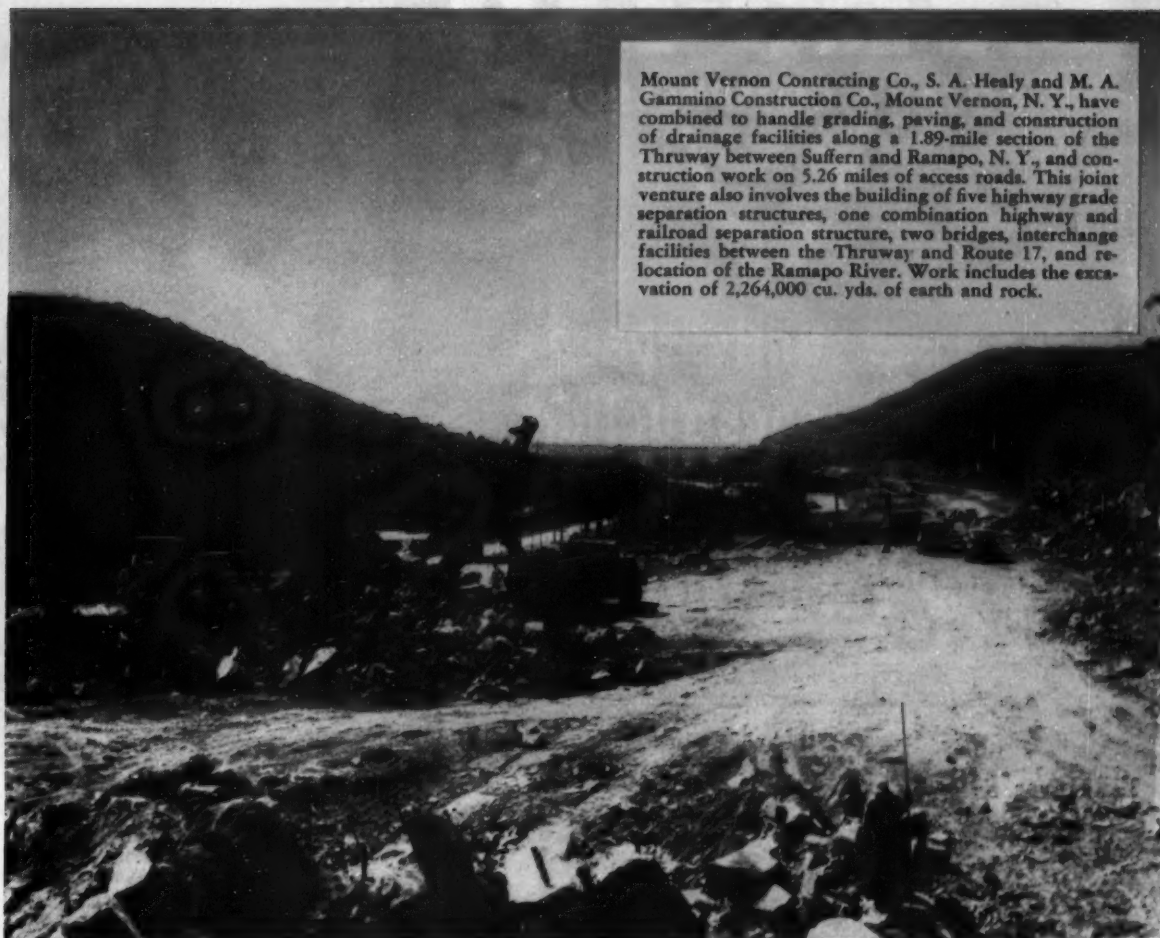
WRITE for
INFORMATION

descriptive  literature . . . sound  movies
cost  studies . . . nearby  job inspection . . . plant  layouts



GULF PRODUCTS *and* FINE SERVICE

*keep equipment rolling
on New York State Thruway*



Mount Vernon Contracting Co., S. A. Healy and M. A. Gammino Construction Co., Mount Vernon, N. Y., have combined to handle grading, paving, and construction of drainage facilities along a 1.89-mile section of the Thruway between Suffern and Ramapo, N. Y., and construction work on 5.26 miles of access roads. This joint venture also involves the building of five highway grade separation structures, one combination highway and railroad separation structure, two bridges, interchange facilities between the Thruway and Route 17, and relocation of the Ramapo River. Work includes the excavation of 2,264,000 cu. yds. of earth and rock.

THE New York Thruway is another tremendous and important project where Gulf tops the list of suppliers of petroleum products. Twenty leading contractors on the Thruway, with a total of 43 jobs, rely on Gulf to help keep equipment delivering top performance.

Mount Vernon Contracting Co., S. A. Healy and M. A. Gammino Construction Co., for example, know from experience that Gulf quality lubricants provide better protection against mechanical delays. And that Gulf fuels help them gain an extra margin of engine power and efficiency. Then too, they appreciate the helpful engineering counsel that Gulf provides, as well as Gulf's prompt delivery service.

Let us discuss with you how Gulf products and service can help you on your next job. They are available to you through more than 1400 conveniently located warehouses. Gulf Oil Corporation • Gulf Refining Company, 1822 Gulf Building, Pittsburgh 30, Pennsylvania.



GYRO-FLO

ROTARY COMPRESSORS

117 units speed
construction
of the
New York Thruway



These four 600 cfm GYRO-FLO portables supply ample air power for operating up to eleven I-R wagon drills on one section of the New York Thruway. Air from a common receiver is piped 700 to 800 feet to the drilling site through a 6" line. In the background is a completely self-contained I-R Quarrymaster for sinking large, deep blast holes.



Here, an I-R GYRO-FLO supplies abundant air for operating a pneumatic pile hammer, driving sheet piling for construction of one of the Thruway's many bridges.

The GYRO-FLO compressor has repeatedly proved its ability to operate continuously under all types of working conditions, with a trouble-free dependability and easy portability heretofore not obtainable in any portable air compressor.

These compressors furnish air to users of 173 Ingersoll-Rand Type FM Wagon Drills—more than 70% of the total wagon drills on this project.



By early 1955, you'll be able to drive from New York City to Buffalo—without a single traffic light or stop sign. That's the fabulous New York Thruway, a dream that I-R Air Power is helping to carve out of rugged terrain where many sections are solid rock.

One hundred seventeen GYRO-FLO rotary compressors, with a combined capacity of 61,265 cubic feet of air per minute, are speeding the job to completion—driving Ingersoll-Rand rock drills and other pneumatic equipment on this high-speed construction project.

Here, where sustained drilling speed and uninterrupted production are of particular urgency, the simplicity and dependability of the GYRO-FLO

design really pay off. The GYRO-FLO rotary sliding vane compressor has no valves, pistons, rings, rods or clutches to wear out, adjust or replace. It delivers an abundant supply of oil-free air at temperatures that never go above 200 F. And pressure is automatically controlled closely and smoothly all the way from 0 to 100% capacity.

Available in 125, 210, 315 and 600 cfm, GYRO-FLO offers the only complete line of rotary portables—each size proven by years of heavy duty in the field. Get the complete GYRO-FLO story from your nearest Ingersoll-Rand distributor or branch office. It will save you money now and for many years to come.

3-94



Ingersoll-Rand

11 Broadway, New York 4, N. Y.

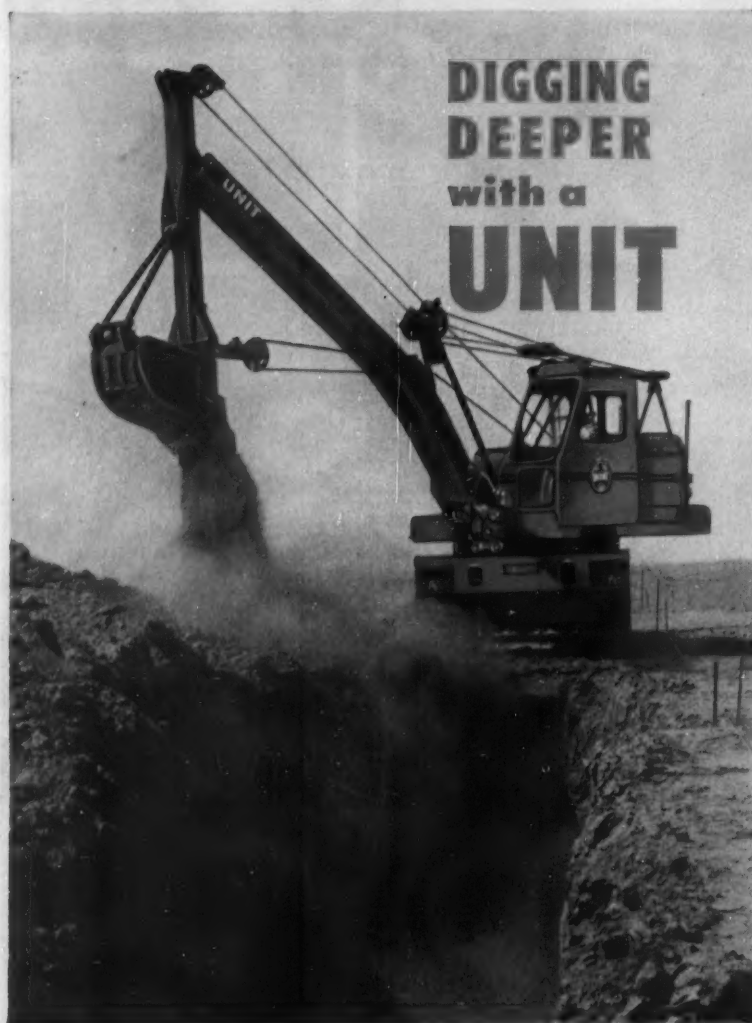
COMPRESSORS

• ROCK DRILLS

• AIR TOOLS

• CARSET JACKBITS

• PUMPS



**DIGGING
DEEPER
with a
UNIT**

You'll Dig More Jobs At More Profit With A UNIT TRENCHOE!

Accurate deep digging of trenches for pipelines, sewers, water connections, footings, basements and culverts is easily and quickly accomplished with a UNIT Trenchoe. The "Goose-neck" boom with its long deep reach assures maximum production. Also saves time trimming vertical sidewalls and corners, and in leveling floor surfaces. Powerful... Compact... Perfectly Balanced. Every UNIT is designed to meet the most rigid demands. Investigate today and earn more pay.

UNIT models are available in 1/2 or 3/4 yard Excavators... Cranes up to 20 tons capacity... Crawler or Mobile types... Gasoline or Diesel. Ask for literature.

UNIT CRANE & SHOVEL CORPORATION
6305 W. Burnham St. • Milwaukee 14, Wis., U. S. A.



Geared to Produce Maximum Usage



JOB TALK . . . Continued from page 12



Snow Goes Easy With Power

It's rather early to talk about snow removal—or is it? A bit of advance planning usually is money in the pocket.

This is not new, but the Prime-Mover Co. of Muscatine, Iowa, reminds us again that extra use can be made of equipment the contractor owns. Prime-Mover makes a 3/4-ton powered wheelbarrow and features among the accessories a snow-plow attachment that slips on for quick snow removal around yards and construction sites. It has a 50-in. angling blade. When the snow blade is in use, the 10-cu. ft. hopper of the unit can be full of ballast or sand for spreading on slippery areas.

Thousands of these handy powered carts of all types are in daily use. An extra low-cost attachment or two can provide an able snow handler that makes short work of a winter chore.

Beats Us, Too

Mr Editor, Sir,

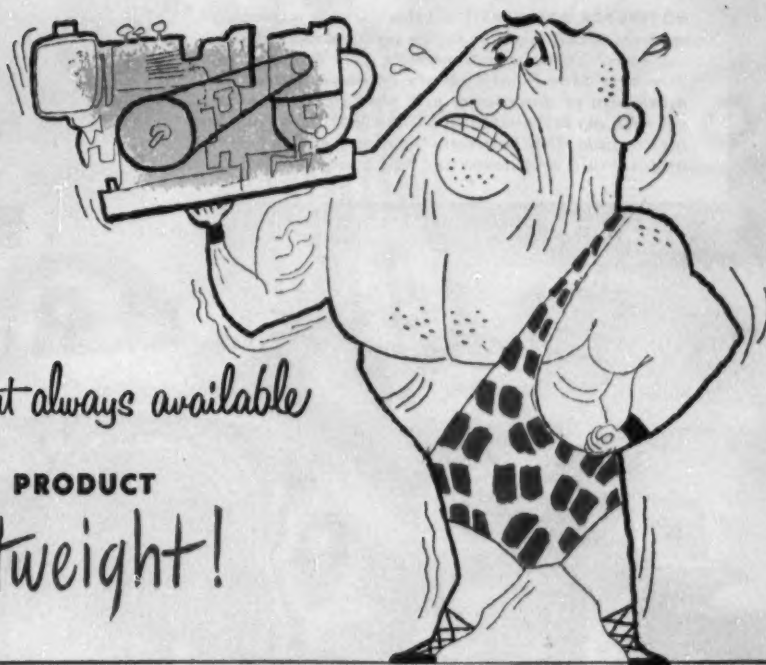
Re: CM&E Vol. 8, August 1954, p. 59

For Pete's sake, tell the guy operating the drifter not to step back—or is it too late? Darn it, only two months ago, friend Gallagher was rooting for accident prevention in CM&E, and it don't seem to mean a thing. It beats me!

L. V. Merlin

George Wimpey & Co., Ltd
Ruislip, Middlesex, England

Evidently the writer of this letter has safety-on-the-brain—a good affliction, incidentally. He is referring to unguarded scaffolding shown on page 59 in the August issue and the excellent article, "Attack Accidents at Their Source," by John Gallagher, on p 144 in the June issue.



weight lifters aren't always available

KEEP YOUR PRODUCT

Lightweight!

Power Products new industrial engine offers

60% less engine weight

42% less engine size

NOW you can give your power equipment the Lightweight being demanded by all of industry. Power Products engines are not just a little lighter—they're 60% lighter than any currently available industrial engine of comparable horsepower . . . and that means greater portability for equipment. Wheels, carriages, etc., formerly necessary for portability, can be eliminated in many cases, allowing further streamlining and extra weight and cost savings.

Power Products engines are more compact in design — easy starting — offer sustained performance at high speeds and are easier to service than any other industrial engines. Yet they actually cost less!

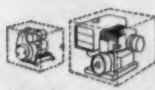
If you want better acceptance — better performance for any industrial product that requires from 2 to 4 horsepower . . . switch to Power Products Lightweight!



LOOK AT THESE FEATURES



Lightweight — A standard 3½ H. P. industrial engine weighs as much as two and one half Power Products industrial engines of 3½ H. P.



Compact — A unique design makes this engine amazingly compact. A comparison of overall dimensions shows a saving of 72% in size over the standard engine.



LOOK AT THE RESULTS — "Pump and motor weigh only 25 lbs.," reports a leading pump manufacturer. This is typical of the kind of amazing lightweight products these engines make possible. "Only 41 lbs., and usable anywhere, at any angle." Grain auger manufacturers are among the many who have found it possible to revolutionize their products with these engines.



POWER PRODUCTS CORPORATION

Grafton, Wisconsin

Gentlemen:
I know what important advantages weight saving can give my products. Please send me full information on these new engines.

Name

Company

Address State

NO TIME FOR DOWNTIME. Until this reservoir is completed, residents of Olathe will be paying premium rates for drinking water. That's why Contractor Lee Yerington says: *"On this dam I need plenty of power with a very minimum of downtime, and that's exactly what I get with my INTERNATIONALS. Take that TD-24 pusher, for example. 3500 hours on the meter and it still has original rails and never has had a major overhaul."*



"I needed durability ...my INTERNATIONAL'S delivered"

Contractor solves water shortage for Olathe, Kansas, with fleet of six INTERNATIONAL crawlers that never faltered in building a big dam and 160-acre reservoir

Water exporting business in Kansas City, Missouri, is due for a sharp slump due to the loss of 5,593 cash customers, the residents of Olathe, Kansas.

For many months past the thirsty population of Olathe has been supplementing the city's inadequate water supply by buying water by the tank car from Kansas City, but this condition is being rectified, and in a hurry.

The Yerington Construction Company, Parksville,

A TRAP FOR CEDAR CREEK is shown taking shape as the INTERNATIONAL TD-24 and B-170A scraper begins another loading cycle in the bottom of the new reservoir.

SOME BIG REASONS WHY earthmoving on this 450,000-cubic yard project moved at such a lively pace are apparent in this photograph: TD-24 speed that hauls heaped loads to the dam site at fastest traveling speeds. The positive rolling ejection feature of the INTERNATIONAL B-170A scraper spreads faster and completely cleans the bowl in the process.





Missouri, started construction of a new dam and 160 acre reservoir $2\frac{1}{2}$ miles west of Olathe, and early in 1955 the city expects to be out of the water importing business.

Lee Dell Yerington is using a total of 21 pieces of equipment including 6 INTERNATIONAL tractors and scrapers to move 450,000 cubic yards of dirt and 60,000 cubic yards of rock on this hurry-up project, and here's what he says about his earthmovers:

"I like my INTERNATIONAL equipment better than any other I have on this job—and for several reasons. I need plenty of power and plenty of durability and my IH crawlers deliver."

Discover for yourself what this contractor has learned about how INTERNATIONAL crawlers and equipment deliver outstanding power and performance when the chips are down. Just call your INTERNATIONAL Industrial Power Distributor for your demonstration today. He'll bring the IH equipment you need to your job site anytime so you can get the lowdown on the IH rigs that mean more profitable business for you from here on in.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

UPGRADE WITH A HEAPED LOAD presents no problem for the Yerington's TD-24 with matched B-170A scraper hauling a solidly packed payload of 21 cubic yards.



ONE OF FOUR TD-18As the contractor used to hold a 7,000-cubic yard daily production average on this job is shown dozing dirt for a small temporary reservoir. This structure will be used in conjunction with the small natural lake as a reservoir until the new reservoir is completed.



INTERNATIONAL

FOR EVERY MOVE IN EARTHMOVING



Thermoid Industrial Brake Linings put more "STOP" in your brakes!

Whether you need a light duty lining or a heavy duty brake block for extreme service conditions, you'll find a Thermoid product with the friction you require. You'll find that your maintenance costs and "down time" are held to a minimum because Thermoid Industrial Linings provide smooth positive braking *plus* extra long life.

When you need Brake Lining, or Brake Blocks, be sure to get Thermoid—choice of leading construction equipment manufacturers.



Thermoid's outstanding line of friction materials is also available in a complete line of woven, molded and special type clutch facings for all construction applications. Ask your supplier.



Thermoid Company
Industrial Friction Materials Division
Trenton, N.J.

IT'S YOUR BUSINESS . . .

Continued from page 14

California averaged 6.9 bidders per job in the 12 months ending in July, 21% more than in the previous year. But this went up to 10.5 bidders per project on jobs of \$1,000,000 or more.

Ohio contracts let in the first half of this year averaged 4.3 bids per contract. Looked at from the contractors' point of view they placed 935 bids to get 218 contracts for a "bidding average" of .233 compared with .278 in 1953 and .348 in 1952. ("It's Your Business," July, 1954). But out of 503 contractors qualified, 230 placed bids and only 119 landed contracts. It's a rugged business.

Work Stoppages Point Up Need for Improved Labor Relations

Construction had more labor troubles than any other industry in 1953. Furthermore construction work stoppages to iron out labor troubles are increasing sharply on construction in the face of declining stoppages in other industries.

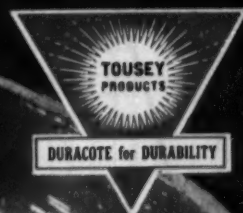
Last year 8,000,000 man-days was the cost of idle jobs due to labor disputes, 1.22% of estimated working time and the most ever reported by the Bureau of Labor Statistics. The number of stoppages was 1,039, also the highest on record. They involved 574,000 workers or 21.7% of construction wage earners. These figures are below the 1952 record of 634,000 workers or 24.1% of the construction wage earners, the previous record. The causes back of these stoppages include: wages, hours and fringe benefits, 91.6% and inter- or intra-union matters 4.9%.

It is obvious from these figures that improved labor relations that will cut this loss can do a great deal to step up the productivity of the construction industry.

SOME BIG CONTRACT AWARDS OF THE MONTH

John McShain Inc., 16th St. and North Arlington Ridge Rd., Arlington, Va., shrine on Catholic University of America grounds, Washington, D.C. for Trustees of the Shrine of the Immaculate Conception, Most Rev. Richard J. Cushing, 1 Lake St., Brighton, Mass. \$10,000,000. (*More Big Jobs on page 28*)

PRODUCTION FACILITIES AT TOUSEY



GIANT mixing tanks in long lines hold thousands of gallons of Tousey finishes. Reds, Blues, Yellows and Greens — all exactly matched to customer specifications—all ready to be packaged for filling small orders, or short runs. No matter what the size of the order at Tousey—drum or tank car—each gets the same exacting treatment — finest quality materials and highest standards in production.

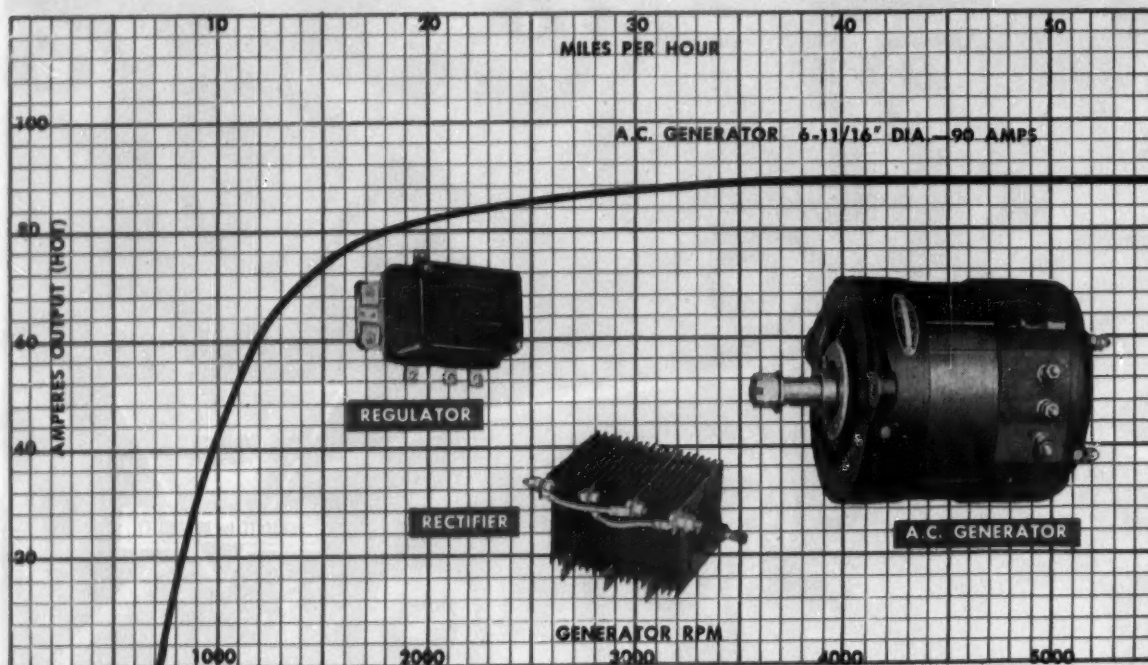
If you have a difficult finishing problem, write us today — perhaps we can help.

TOUSEY VARNISH CO. 520 W. 25th St., Chicago 16, Ill.

Power Packed and



HERE'S THE A.C. ANSWER TO
EXTRA-HEAVY ELECTRICAL DEMANDS



DELCO-REMY

A. C. Generator, Regulator and Rectifier

Here's the answer for "problem" vehicles—Delco-Remy's new long-lived A.C.-D.C. charging system! It's specifically designed to meet the *extra-heavy* electrical demands of contractors' trucks and other vehicles equipped with two-way radio, floodlights or any extra electrical units . . . ample current reserve picks up discharged battery quickly in operation. Delco-Remy A.C. generators are suitable for use at all engine speeds.

With output ranging from 30-40 amperes at curb idle and up to 90 amperes at higher engine speeds,

the new Delco-Remy A.C.-D.C. charging system meets all electrical needs under the toughest operating conditions. Included in the new system is the A.C. generator, a matching regulator, and a rugged, dependable dry-plate rectifier which converts generator A.C. output to direct current.

Application packages complete with installation instruction sheets for popular makes of cars and trucks are now available. The conversion job is simple. For further details and application data, see your nearest United Motors distributor.

AS A DIVISION OF GENERAL MOTORS, WE ARE PROUD TO JOIN IN CELEBRATING THE BUILDING OF GM'S FIRST 50 MILLION CARS

A GENERAL MOTORS PRODUCT



A UNITED MOTORS LINE

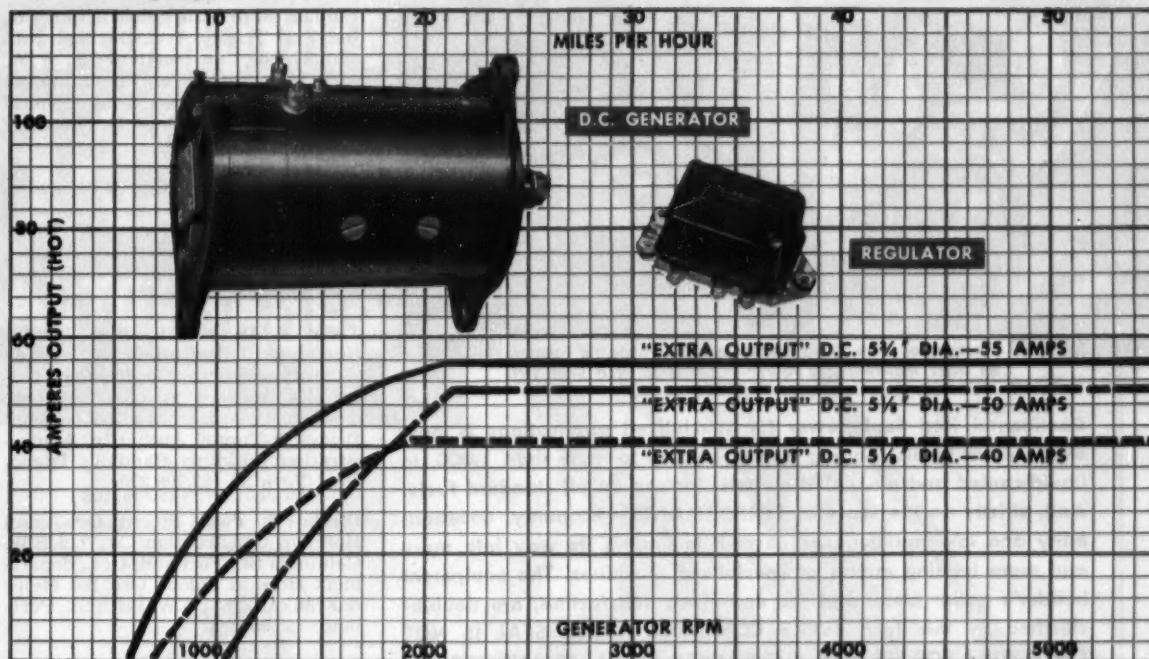
DISTRIBUTED BY WHOLESALEERS EVERYWHERE

WHEREVER WHEELS TURN OR PROPELLERS SPIN

Right for the Job



HERE'S THE D.C. ANSWER TO
HEAVY ELECTRICAL DEMANDS



DELCO-REMY

Extra-Output D. C. Generators and Matching Regulators

Delco-Remy extra-output D.C. generators are an economical answer to the electrical needs of contractors' pickup or panel trucks as well as other vehicles with additional lights, two-way radios, or other special electrical equipment in medium to heavy-duty service. Delco-Remy extra-output D.C. generators are low in cost, simple to install, economical to maintain.

DELCO-REMY 40-AMP GENERATOR has low cut-in, about 7 mph, charges from 11 to 17 amperes at curb idle . . . full output about 18 mph —for vehicles customarily used in heavy traffic.

DELCO-REMY 50-AMP GENERATOR has slightly higher cut-in, about 11 mph . . . full output about 21 mph—for vehicles customarily operated at higher speeds, with minimum slow driving.

DELCO-REMY 55-AMP GENERATOR has very low cut-in, about 6 mph; charges at curb idle from 20 to 30 amperes . . . attains full output at 20 to 25 mph—for vehicles customarily operated at low speeds with added electrical loads, such as contractors' field cars.

For further details and application data, see your nearest United Motors distributor.

Delco-Remy

DIVISION. GENERAL MOTORS CORPORATION, ANDERSON, INDIANA

WHEREVER WHEELS TURN OR PROPELLERS SPIN

CONTINENTAL RED SEAL *means* **MORE AND BETTER POWER**



Worthington Blue Brute compressor, operating the tampers on track maintenance. Power—Continental Red Seal Y91.

Continental Red Seal power for specialized applications is now available at levels ranging from 2 h.p. up to more than 1,000, in liquid-cooled and air-cooled models, for use on all standard fuels. And, strictly on the score of PERFORMANCE—economy, dependability and low maintenance cost—it is finding its way into more and more leading makes of specialized machines. The equipment builder's good name, and the end-user's satisfaction, are double-clinched by this fact: **EVERY CONTINENTAL RED SEAL IS NOT ONLY BUILT FOR ITS JOB, BUT BACKED BY PARTS AND SERVICE FACILITIES COAST TO COAST.**

NO OTHER ENGINE GIVES YOU ALL THESE ADVANCED ENGINEERING FEATURES

PATENTED INDIVIDUAL PORTING — FULL-LENGTH WATER JACKETS
TOCCO-HARDENED COUNTERBALANCED CRANKSHAFT
ALLOY STEEL VALVE SEAT INSERTS — LEAKPROOF WATER PUMP
PATENTED OIL AND DUST SEALS — POSITIVE ROTATION EXHAUST VALVES

A COMPLETE LINE OF 4-CYCLE AIR-COOLED ENGINES

Continental also builds air-cooled models, from 2 to 3 h.p., for heavy-duty applications in industry and on the farm. They embody the exclusive Contox® external ignition system, greatest air-cooled engine advance in recent years. For information, address Air-Cooled Industrial Engine Division, 12800 Kercheval Ave., Detroit 15.



6 EAST 45TH ST., NEW YORK 17, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 34, CALIF.
6218 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 910 S. BOSTON ST., ROOM 1004, TULSA, OKLA.
1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.

Continental Motors Corporation
MUSKEGON, MICHIGAN

BIG JOBS OF THE MONTH . . .

Continued from page 24

George A. Fuller Co., 111 W. Washington St., Chicago, "Capitol Courts" shopping center in Milwaukee for Ed Schuster & Co., Inc., 2153 N. Third St., Milwaukee, Wis. \$15,000,000.

Lock Joint Pipe Co., Turner, Kan. 14 mi reinforced concrete water main, 18,210 ft, 35 in., 56,000 ft, 24 in. to Mid-Continent International Airport, Kansas City, Mo. for the City, c/o Wm. I. Hornbuckle, purchasing agent, Melvin P. Hatcher, water director, City Hall, Kansas City, Mo. \$837,350.

William Muirhead Construction Co., Inc. East Trinity Ave., Durham, N.C. and **Walsh Construction Co.**, 5 W. 34th St., industry control equipment plant near Roanoke, Va., for General Electric Co., River Road, Schenectady 5, N.Y. \$6,000,000.

Peter Klewit Sons' Co., 345 Kieways Ave., Arcadia, Calif. 3.9 mi Ramona Freeway between Rosemead Blvd., and San Gabriel River, Los Angeles Co. for State Division of Highways, Los Angeles, \$5,960,241.

Tully & Di Napoli, Inc., 127-150 Northern Blvd., Corona, N.Y. grade separation structure on Horace Harding Expressway at Queens Blvd., Queens Co., L.I., for Triborough Bridge & Tunnel Authority, Administration Building, Randall's Island, New York 35. \$2,799,270.

Diesko & Post, Salem Ore., and **Hoffman Construction Co.**, 715 S.W. Columbia St., Portland, Ore., department store at Salem, Ore. for Meier & Frank Co., 621 S.W. Fifth St., Portland. \$8,000,000.

Suber & Co., Inc., P.O. Box 338. Whitmire, S. C. 12.4 mi paving on Indiana East-West Toll Road in Steuben Co. for Indiana Toll Road Commission, 309 W. Washington St., Indianapolis. \$6,898,586.

C. J. Langenfelder & Son, Inc., 8427 Pulaski Highway, Baltimore, constructing 5.33 mi of the Northeastern Extension in Milford Township, Bucks County and Lower Milford Township for Pennsylvania Turnpike Commission, 11 North Fourth St., Harrisburg. \$3,817,400.

Arthur G. McKee & Co., 2300 Chester St. Cleveland, Ohio, urea plant, office building, laboratory and warehouse, shop, boiler house and locker room for Petrochemicals plant, Lima, Ohio. \$17,000,000.

Guy F. Atkinson Co., & Ostrander Co., 10 W. Orange Ave. S., San Francisco, navigation locks adjacent gravity dam and fish ladder, The Dalles Dam, Oregon, for U.S. Engineers, Pittock Block, Portland, Ore. \$12,708,179.

(More Big Jobs on page 181)

now—

a 4-WHEEL DRIVE

Excavator-Loader with

plus features for
plus performance

TRACTOMOTIVE

TL-12

TRACTO-LOADER

Weight: 12,000 lb.

Bucket Capacity: 1 cu. yd.

Speeds — 4 forward, to 20 mph . . . 4 reverse, to 25 mph

Brake Hp. — 63



MODEL TL-10 for all types of bulk material handling . . . with short, 11-ft. turning radius, torque converter drive, clutch-type transmission and Allis-Chalmers POWER-CRATER engine, $\frac{3}{4}$ cu. yd. bucket, weight 11,400 lb., 63 brake hp.



4-WHEEL DRIVE for excellent traction — excavating or loading — even under adverse ground conditions . . .

PLUS HYDRAULIC TORQUE CONVERTER DRIVE for smoother, faster operation. No ramming or clutching, no engine stalling . . . easier maneuvering, snappy bucket action!

PLUS CLUTCH-TYPE TRANSMISSION Eliminates most shifting. Operator simply pushes a lever to go forward, pulls it back for reverse. He can work all day without shifting gears on short-haul jobs!

PLUS REAR-WHEEL POWER STEERING This advantage together with all-wheel drive means easy steering and maneuvering under all operating conditions.

PLUS NEW, DYNAMIC ALLIS-CHALMERS POWER-CRATER ENGINE Gives you high-octane performance on regular gasoline.

. . . .

Yes, here's 4-wheel drive **PLUS . . .**
PLUS all the advantages Tractomotive offers you in its famous TL-10 Tracto-Loader — the outstanding performer on bulk material handling. Choose the model that fits your needs.

Wire, write or call for a demonstration NOW!

POWER-CRATER is an Allis-Chalmers trademark

See your nearest Allis-Chalmers
Industrial Tractor Dealer

TRACTOMOTIVE

TRACTOMOTIVE CORPORATION, DEERFIELD, ILLINOIS

Tracto-Loaders • Tracto-Shovels, Side Booms and Hydraulic Rippers
for Allis-Chalmers Crawler Tractors • Loader and Shoulder
Maintainer for Allis-Chalmers "D" Motor Grader

On VEPCO'S Roanoke Rapids, N. C.

it's **SHELL**.*



Hydroelectric project . . .

Gasoline
Fuel Oil
Diesel Fuel
Kerosene
Industrial
Lubricants

Solvents
Motor Oils
Anti-Freeze
Greases
Outboard
Motor Oil



The Roanoke Rapids Project for the Virginia Electric and Power Company, being constructed by Stone & Webster Engineering Corporation, is going full speed ahead. This extensive job keeps hundreds of pieces of heavy construction equipment busy, day and night. Nearly 100% of this equipment relies on Shell Industrial Lubricants and Fuels to meet the rigorous operating conditions.

When completed, Roanoke Rapids project will supply 100,000 kilowatts of electricity for Vepco's system.

Widely used in construction work and wherever heavy duty equipment operates, Shell lubricants protect machinery and at the same time keep maintenance costs at rock bottom. Perhaps it will pay *you* to look into the savings of a 100% Shell program.

SHELL OIL COMPANY

50 WEST 56TH STREET, NEW YORK 20, N. Y.
100 BUSH STREET, SAN FRANCISCO 6, CALIF.

*A diligent search could uncover only one piece of Vepco's equipment NOT using a Shell product.

From feed to finish
in less than 3 seconds

Patent
Pending



**CONTROLLED
IMPACT
ACTION**

UNIVERSAL IMPACT MASTER GIVES YOU TOP CAPACITY PLUS
UNIFORM GRADATION CUBICAL AGGREGATE IN ONE FAST OPERATION

Controlled Feeding

Shovel loaded run-of-quarry rock is directed into the path of the rotor hammers to receive the smashing impact of a direct blow.

Controlled Breaking

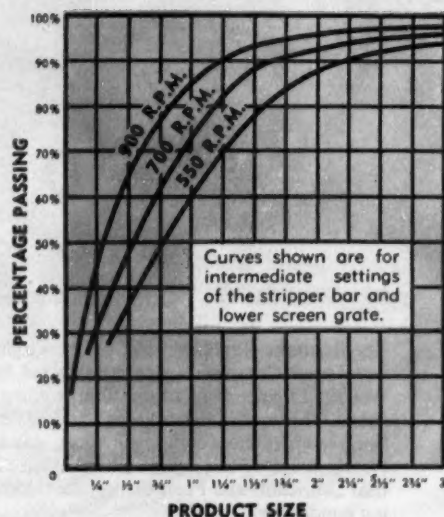
All of the breaking is accomplished by the impact of rotor hammers upon the rock resulting in a cubical product of highest quality. Both rotors rotate in the same direction *with the flow of material* promoting fast feeding and fast discharge for top capacity. Incoming rock is struck a solid blow by the first rotor and finish size is instantly discharged. Oversize particles are struck by the second rotor and finish size is again quickly discharged.

Control over Finished Product

Three simple mechanical adjustments provide complete control over finished product. Size is governed by rotor speed. Various positions of stripper bar and lower screen grate give a wide degree of control over gradation. In closed circuit setups recirculating loads can be kept to a minimum.

- **Ask for Literature.** Get the complete story on the UNIVERSAL IMPACT MASTER. Learn how its high speed production of highest quality uniform gradation cubical aggregate can earn greater profits for you. Models available for both portable and stationary setups with capacities to 750 tons per hour. Full details in Bulletin No. U534.

PERFORMANCE MODEL 3240



PETTIBONE

UNIVERSAL

In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION

327 8th St. N.W., Cedar Rapids, Iowa

A Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division St. Chicago 51, Illinois

(Advertisement)

Hi-performance Jaeger pumps cut water-handling costs



New Model 2PN moves all the water a 2" hose can handle

This latest Jaeger 2" pump delivers its rated 10,000 gph when operating at only 2400 to 2550 rpm (as much as 400 rpm slower than similar pumps). It will actually pump all the water that can be pulled through a 2" suction line under average pumping conditions. You'll find it conservatively rated, even at heads

well above 100 ft. Weighs only 190 lbs. including big pneumatic tires, measures only 24" x 21" x 28" high, yet it's built for heavy duty service with 20% steel shell, reversible liner plate, long-life Jaeger Lubri-Seal on shaft, impeller adjustable for wear and powerful Wisconsin AKN engine of 5.3 hp at 2500 rpm.



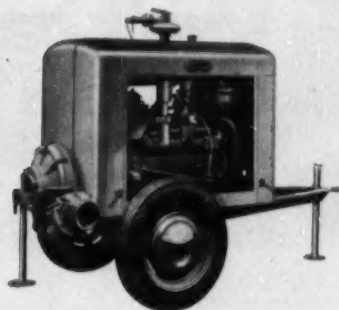
Pumping 4,000 gpm with low-cost diesel power

Because they develop their full rated volume at low operating speeds, big Jaeger pumps are ideally suited for diesel operation on big cofferdam and well point work. The Jaeger Model 10PD above is pumping 4000 gpm at 1500 rpm. This high efficiency at fuel-saving, engine-saving speeds is an ex-

clusive characteristic of Jaeger "Sure-Prime" pumps. It requires larger shells and impellers but pays off in performance. Jaegers prime without engineering, don't vapor-lock on hard pulls, consume less fuel and average thousands of hours longer service than pumps that must run at higher speeds.

Latest type jetting pumps in 3", 4", 5", 6" sizes

For a wide range of volumes, and pressures up to 275 psi, Jaeger has developed the most modern type of high pressure pumps... self-priming at the rate of 1 second per foot of lift, equipped with enclosed impellers, labyrinth sealing rings, positively lubricated shaft seals, automatic spring-actuated check valves, heat-resisting stellite-valved engines:



Model 3CPH delivers 420 gpm at 40 lbs., 125 gpm at 130 lbs., with air-cooled Wisconsin VF-4 (25 hp @ 2400 rpm).

Model 4CPH delivers 700 gpm at 75 lbs., 325 gpm at 200 lbs., with 6 cylinder engine of 218 cu. in. displacement (80 hp @ 2500 rpm).

Model 5CPH delivers 825 gpm at 80 lbs., 300 gpm at 250 lbs., with 6 cylinder engine of 226 cu. in. displacement. (95 hp @ 2600 rpm).



1 1/2" to 10" Electric Pumps

Jaeger "Sure Prime" pumps with electric motor drive are available for all types of dewatering, including the operation of Jaeger Well Point Systems. The characteristic low speed (1150 rpm) operation of Jaeger 6" to 10" electric pumps results in much longer life. Jaeger's oversize shells, holding more priming water, also prevent overheating and vapor-lock even when exhausting the longest well point header lines.

For engineering service on pumping problems, or specific information about any Jaeger pumps, see your Jaeger distributor or write. For file data, request Catalog P-4.

THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

TRACTOR LOADERS • COMPRESSORS • CONCRETE MIXERS • PAVING MACHINES

"Smoother stripping -cuts cable costs"



Allison TORQMATIC equipped Osgood dragline owned by J. C. Kitzmiller Coal Co. Unit has 3 yard bucket, 80 foot boom, strips 1000 tons of coal per month

AFTER 2,000 hours of low-cost strip-mining, veteran mine owner J. C. Kitzmiller reports "smoother stripping — reduced cable cost" due to shock-free power transmission in his Osgood dragline. The savings he's made with his Allison TORQMATIC Converter have made him decide to specify Allison TORQMATIC DRIVES in future equipment.

He's spending less for cable replacement in his Osgood dragline because the TORQMATIC Converter protects cable by absorbing sudden shock loads.

He's spending less for dragline repairs, too. The TORQMATIC Converter gives the operator time to cut off power—"throw out the drag"—when the bucket hits a snag, guards boom and drive line from harmful overloads.

And he's getting more work from his drag because with fewer repairs it stays on the job earning money—out of the shop costing money.

The TORQMATIC Converter matches engine power to load

demand, helps prevent harmful engine lugging and stalling. It multiplies engine torque up to $3\frac{1}{2}$ times—broadens the engine's effective horsepower range.

When load demand is equal to, or less than, engine torque the Allison TORQMATIC Converter acts as a fluid coupling to conserve fuel, boost engine life. This feature is standard equipment in every Allison Converter.

You can produce more for less with shock-free TORQMATIC power transmission in your 40- to 400-horsepower gasoline or Diesel equipment. Ask your manufacturer or dealer about TORQMATIC DRIVES in your equipment or write for more information to: Allison Division of General Motors
Box 894T, Indianapolis 6, Indiana

ALLISON TORQMATIC CONVERTER

Simple Design—one-piece cast converter elements—minimum maintenance

Compact, easy to install in existing equipment

Designed for power applications in the 40 to 400 horsepower range

Longer Equipment Life—absorbs shock, eliminates harmful engine lugging, cuts maintenance costs



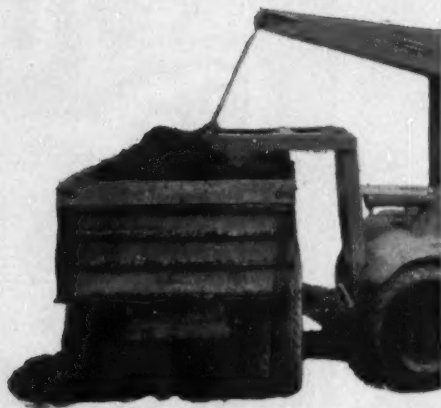
Allison TORQMATIC DRIVES

Compact, efficient hydraulic drives for Cranes * Trucks * Tractors * Scrapers * Shovels * Drilling and Servicing Rigs

GET TRUCK PAYLOADS!

with the

DEMPSTER DIGGSTER® GRD-101



The two photos above show some very important advantages you get when you use a Dempster-Diggster GRD-101. Photo directly above shows you why you have no truck shock with a Dempster-Diggster. You can lay bucket in truck body, trip latch and pull bucket up off load. Photo at right above shows you why you get a truck payload with a Dempster-Diggster . . . and how natural and easy it is to do so. This truck is now loaded to maximum heaped capacity, yet Dempster-Diggster has ample clearance. The dumping height is 9'6" and the digging height is approximately 15 feet. This enables the Dempster-Diggster to work with high dump equipment.

Other very important features of the new Dempster-Diggster GRD-101 include: AN EXCAVATOR THAT NEEDS NO



WHEEL TRACTION (loading of bucket is accomplished by the exclusive Hydraulic Crowd and Hoist Action of the Dempster-Diggster) . . . TRUCK-SPEED MOBILITY TO AND FROM JOBS . . . AUTOMATIC BUCKET TRIP . . . MINIMUM TURNING RADIUS . . . THE SHOVEL WITH TORQUE CONVERTER . . . HYDRAULIC STEERING. Here's a shovel

that gives you extra speed on the job and to and from jobs that means extra profits to you! Pound for pound, dollar for dollar, the Dempster-Diggster GRD-101 will out-dig and out-load any other available competing machine in tough going! Let us prove that statement! Write for complete information. Manufactured by Dempster Brothers, Inc.

DEMPSTER BROTHERS

3114 SHEA BUILDING, KNOXVILLE 17, TENN.

Actual road experience proves...

NYLON CORD TRUCK TIRES GIVE

DU PONT and leading tire manufacturers, after working and testing for ten years, developed nylon cords for truck tires. Actual road experience proves nylon to be the best protection yet against tire failure. From all over the country truckers are reporting that nylon cords give more mileage, more recaps and fewer road delays. Records show nylon cords mean lower cost per tire mile.

Nylon has greater tensile strength, flex and abrasion resistance than any other cord used in tires. Nylon cords absorb road shock and give better protection against bruise damage; moisture seeping through cuts doesn't adversely affect nylon. Nylon cords take hottest road temperatures in stride, and they run cooler.

Prove to yourself that nylon cord truck tires give substantially lower cost per mile. Ask your dealer about nylon cord truck tires today. (Du Pont makes nylon fibers, does not produce tires.)

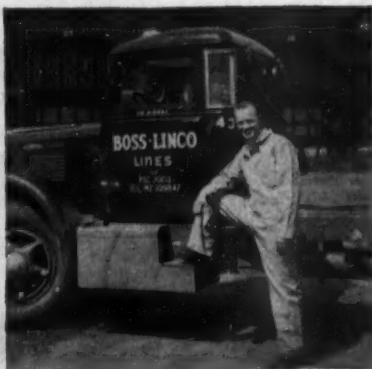


BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY

You'll find nylon in passenger-car tires, too! Shock-absorbing nylon cords mean extra protection against blowouts... greater safety on any road.



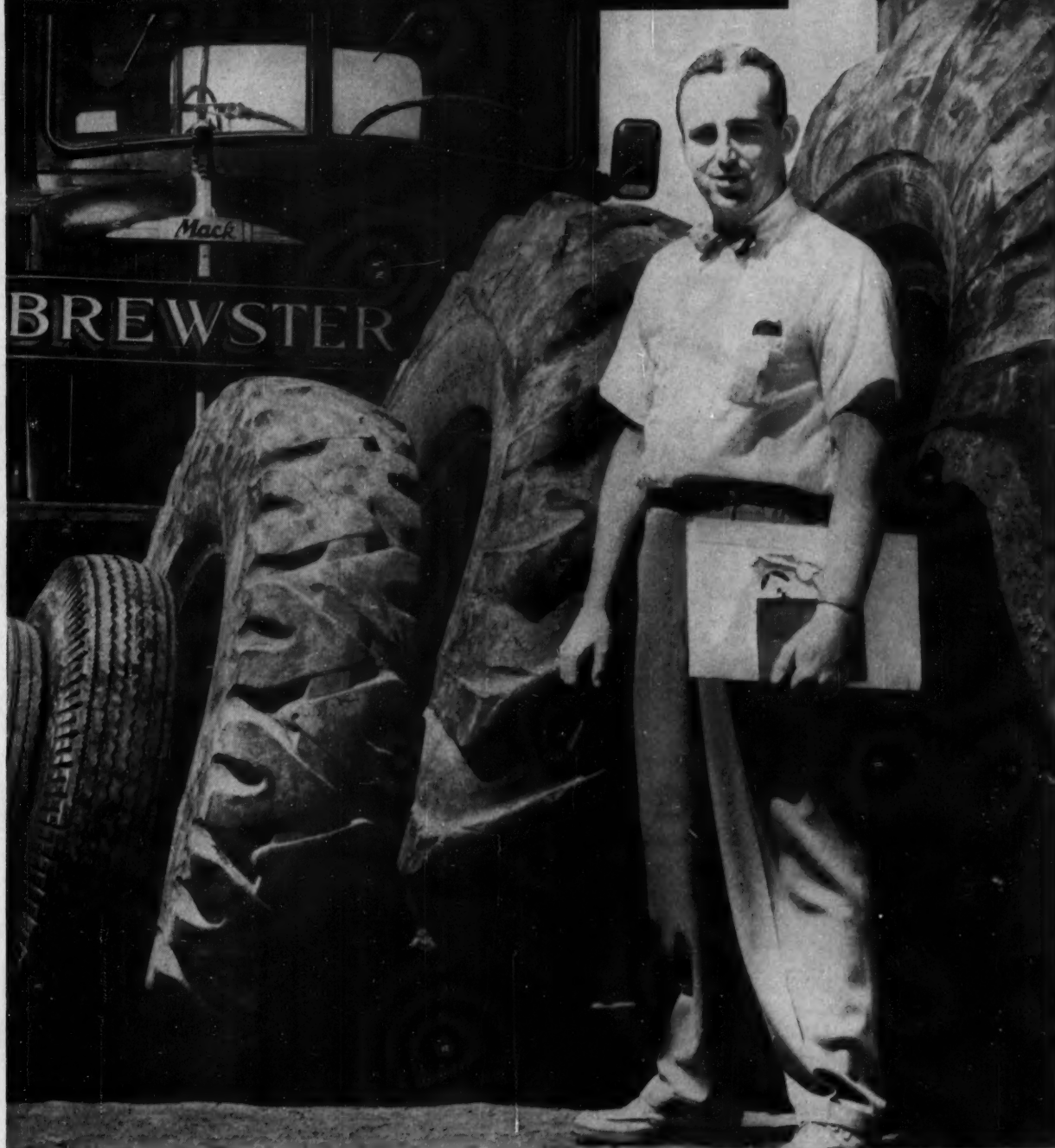
MORE MILEAGE. "On these rugged roads," reports Wm. P. Fuller, Hillyer Deutch Edwards Lumber Co., Moreauville, La., "nylon cords are the only tires we can get that can do our job."



FEWER ROAD DELAYS. "Nylon cords have cut our road delays 60%," reports Lenn Binn of the Boss-Linco Lines, Buffalo, N. Y. "In over 20 million miles of service, not one nylon has blown out."



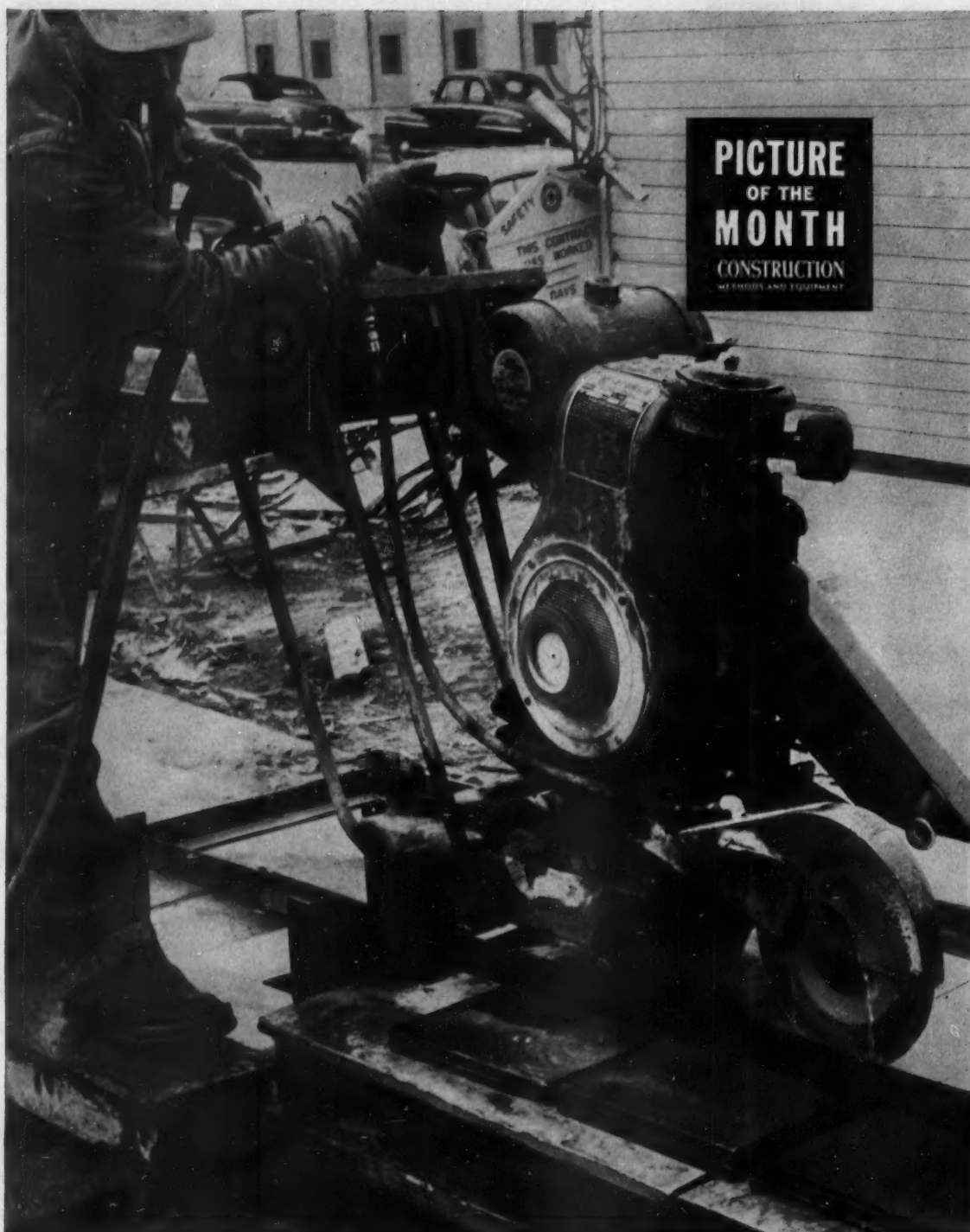
LOWER COST PER MILE



"ON ALL TYPES OF EQUIPMENT, our experience proves nylon cords cut tire costs from 25% (on-the-road equip-

ment) to 30% (off-the-road equipment)," says Henry D. MacArty of Geo. M. Brewster & Son, Inc., General Contractors

of Bogota, N. J. "We're switching exclusively to nylon cords on more than 110 pieces of equipment."



Quick and Perfect

STONE SAWING to exact dimensions comes easy with this setup, devised by Sharp Brothers Contracting Co., Kansas City. A recent contract called for paving of a large area with 12-in. squares of Colorado Red Sandstone. Slabs of stone are sawed to accurate size quickly, and without breakage by

mounting a Clipper Model C-75 concrete saw on a firm track of steel angles that guides the machine along a rigid course of travel. Sandstone blocks lined up on the floor beneath the track are cut in assembly-line fashion as the saw passes over them. Sharp uses a Clipper wet-cutting diamond blade.

Greatest speed, power and work range of any full 1-yd rig!



It's the LS-98...another NEW Link-Belt Speeder

IN the full 1-yard class—they don't come any faster or more powerful than the new LS-98 Link-Belt Speeder! Since first introduced in May, coast-to-coast records prove you get more productive capacity, no matter what the job!

Speed-o-Matic power hydraulic controls make machine movements instantaneous, smooth, precise. Effortless operation helps increase output 25% and more.

You get more cycles too, because LS-98 has more "live" weight and structural strength to utilize extra useable hp. Combine this with exceptional maneuverability *plus* practical transportability—no wonder LS-98 is acclaimed today's greatest full 1-yard shovel-crane investment!

ATTENTION ALL SHOVEL-CRANE BUYERS:

Your Link-Belt Speeder Distributor is currently introducing a great deal of new equipment to help you make more money. So, before you buy a shovel-crane of any capacity for any application—be sure you check with him. You'll be glad you did.

LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa

A few of the many LS-98 features

- ★ **Speed-o-Matic controls** put LS-98's extra hp at operator's fingertips. Smooth dig-swing-dump action means more cycles per day.
- ★ **Interchangeable, shoe-type clutches** are self-adjusting, internal expanding. Shells are high-friction alloy cast iron. All clutches interchangeable.
- ★ **Foolproof power steering.** Every travel and operating action is controlled from operator's position, even setting the digging brakes.
- ★ **Massive, dual, conical hook rollers,** riding on roller bearings in machined roller path, eliminate center pin pull and increase roller path life.
- ★ **Power load lowering clutches.** Available for either or both main drums. An exclusive feature.
- ★ **Gears enclosed, running in oil.** All horizontal deck gears and swing-travel bevel gears enclosed and run in oil.

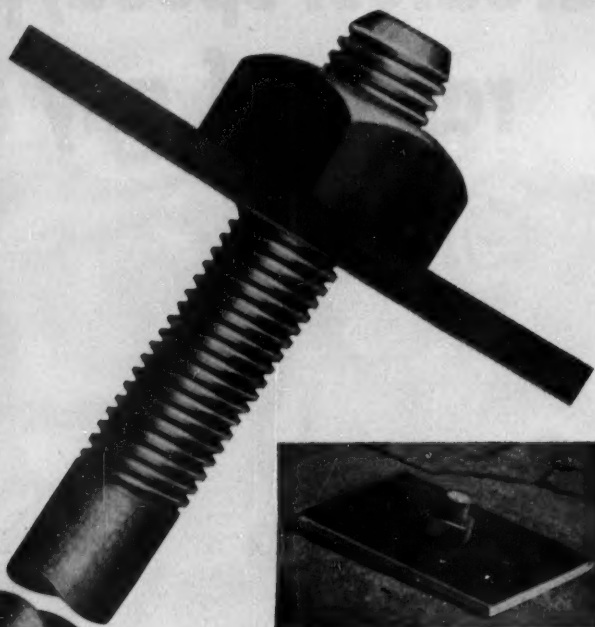
EE-607

LINK-BELT SPEEDER

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES



◀ To reduce the danger from slides, rock formations like this can be bolted economically with Bethlehem Rock Anchor Bolts.



Worried About Rock Slides?

Many a rock slide can be prevented by using Bethlehem Rock Anchor Bolts at potential danger points.

Bethlehem Rock Anchor Bolts minimize the danger of rock slides because they reinforce the rock formation, preventing boulders or layers of rock from sliding or falling. They are ideal to use in cuts with high banks, or in steep hillsides, and are highly effective where the formations which they anchor in turn support overlying strata and earth.

Bethlehem Rock Anchor Bolts are made in lengths of from 2 ft to 10 ft. One end of the bolt has 5 in. of 1-in. rolled threads. The opposite end contains a 6-in. forged slot.

In installing the bolt, a 1¼-in. diam hole is drilled about 3 in. less than the length of the bolt. A wedge is started in the slot, then the bolt is inserted in the hole, after which it is driven to refusal. A dolly protects threads from damage. Driving action forces wedge deep into slot, spreading bolt-end so that it locks against sides of hole.

Bethlehem Rock Anchor Bolts come with an American Standard square nut. Depending upon the type of strata, they can be used in combination with rock-anchor plates or ties, or angle washers.

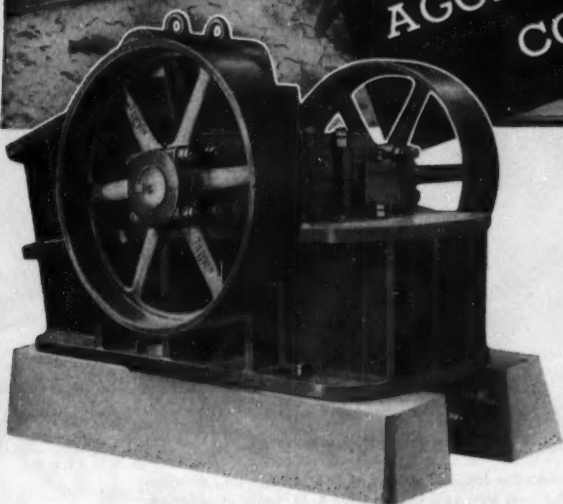
We have an interesting two-color booklet on rock anchor bolts. Write to the nearest Bethlehem office for your copy.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



BETHLEHEM ROCK ANCHOR BOLTS



A Traylor Jaw Crusher on the job site puts you in complete control of your aggregate supply. You control the source . . . the delivery . . . the quality . . . *and the cost* of job-produced aggregate. Original Traylor features . . . curved jaw plates . . . heavy-duty construction . . . more efficient application of power . . . add up to greatly reduced operating costs for longer periods of maintenance-free operation. Get full information on a Jaw Crusher "Traylor-Made" to control your aggregate costs. Mail coupon for illustrated bulletin.

Traylor

TYPE H AND HB **JAW**

CRUSHERS

TRAYLOR ENGINEERING & MANUFACTURING CO.
1607 MILL ST., ALLENTOWN, PA.

Tell me how I can control my costs on job-produced aggregate. Send me Bulletin 4105.

Name _____
Position _____
Company _____
Address _____

West Coast Branch: 607 Sharon Bldg., 80 New Montgomery St., San Francisco 3, Calif.
Northwest Distributor: Balzer Machinery Co., 2138 Southeast 8th Ave., Portland, Ore.



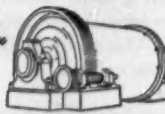
Primary Gyratory Crushers



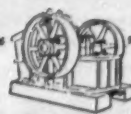
Rotary Kilns



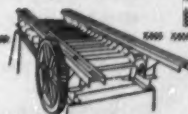
Secondary Gyratory Crushers



Ball Mills



Jaw Crushers



Apron Feeders

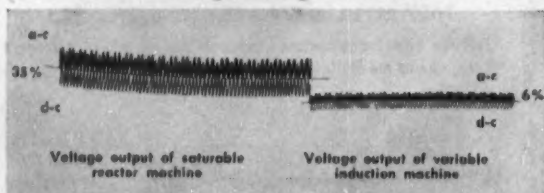
All the advantages of ...yours with A.O. Smith



Salesman on the Job, Bill Morley of E. R. Joseph Co., distributors, is the man who sold Lehigh their A. O. Smith installation.

→ Proof that only A. O. Smith gives you a d-c rectifier

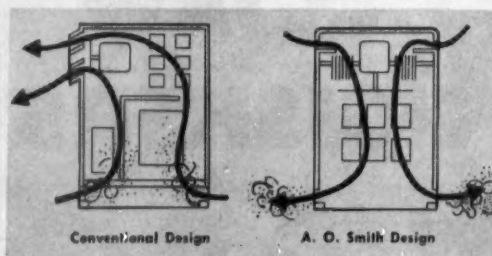
Big voltage "ripple" can keep your welding in rough water!



These oscillograms show why only A. O. Smith variable induction transformers give you welding characteristics like those of m-g sets. The so-called d-c output of some conventional rectifiers is composed of 35% a-c — compared to only 6% a-c "ripple" in A. O. Smith's output. That's why A. O. Smith gives you a steadier, smoother welding.

The cards are stacked against you with most rectifier stacks!

Selenium rectifiers last indefinitely if properly cooled. A. O. Smith does it with *preferential cooling*—the air is directed



none of the disadvantages rotary welding equipment **d-c Rectifier Welders**

**Lehigh Construction Company selects 10 all-weather A.O. Smith machines
for work on large hospital-building job**

BACKED by a great record of successful operation, Lehigh Construction Company is widely recognized as one of the East's top contractors. It's only natural that a stand-out performer like Lehigh should select stand-out equipment for its work.

Lehigh recently purchased 10 A. O. Smith heavy-duty d-c rectifier welders. The units are

shown at left on a steel erection job for a large, new Philadelphia hospital.

This job in itself illustrates one of the big advantages offered by d-c rectifier welders. Lehigh operates 12 rectifiers off a single 125-kw diesel. With m-g sets on the job, the same diesel will handle only 10 welders — that's two extra welders at no extra power cost.

More good reasons why it pays to operate A. O. Smith heavy-duty d-c rectifier welders

• **LOWER OPERATING COSTS.** These rectifiers cost far less to run than either gas-drive units or m-g sets.

• **LOWER MAINTENANCE COSTS.** A. O. Smith rectifiers are far simpler, much easier to

service. No trouble with electric motor or gas engine.

• **PORTABILITY.** Gas-driven welders and m-g sets simply cannot equal the compact, lightweight portability of A. O. Smith d-c rectifiers.

welder with superior welding performance built-in

first over the stacks. And that's *all the air* (not just part of it) — in greater quantities and at higher velocities. A. O. Smith uses a full 1/6-hp fan motor, with permanently lubricated ball bearings, and a big 18-in. blade. (Many conventional machines have only a 1/20-hp motor.) What's more, the air is cleaner because it's drawn in at the top of the case — not from ground level. Add all these up—and you see why A. O. Smith warrants its rectifier stacks for five years.

Built by welders — for welders

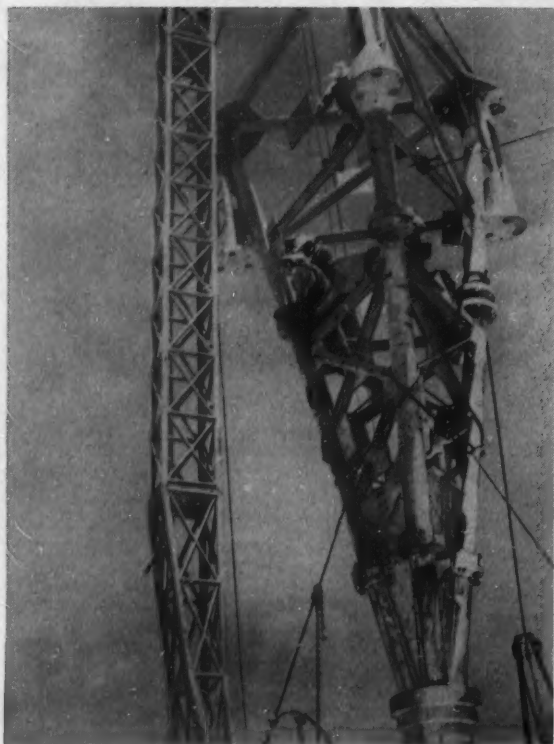
Get all the facts about the complete line of A. O. Smith a-c and d-c welding machines, electrodes and supplies. *They're built by welders — for welders!* Call your nearest distributor or write A. O. Smith Corp., Welding Products Division, Milwaukee 1, Wisconsin.

Through research  ... a better way

A.O. Smith
CORPORATION

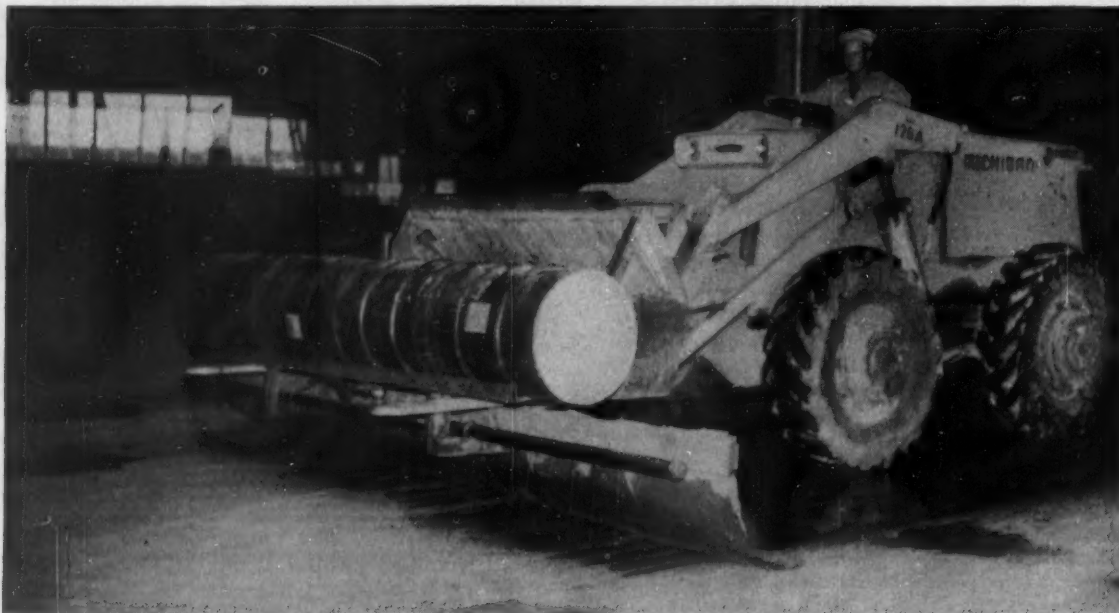
WELDING PRODUCTS DIVISION
Milwaukee 1, Wisconsin
INTERNATIONAL DIVISION: MILWAUKEE 1, WISCONSIN

Construction News in Pictures



TALLEST ERECTION—The new 1,572-ft transmitting tower for Oklahoma City's Station KWTU gets the honor of being the world's tallest structure. The hoist was located 200 ft away, and its operator was equipped with telephone to keep in touch with a central control point. Hoist used more than 14,000 ft of $\frac{1}{8}$ -in. Hazard

wire rope in placing a total of 52 sections. Base (at left) is being set on 21 porcelain tubes which act as the insulator and load bearer for the 1,323,392-lb welded tower. Contractor is Mizell Construction Co., Ganado, Tex.—Photos by American Chain & Cable Co. and Lincoln Electric Co.



SPREADING AT HOME—The Austin Company built a plant for the Clark Equipment Co., manufacturer of the Michigan tractor shovel. To spread a liquid hardener over the new concrete floor, Austin attached a wooden rack to a Michigan unit and secured

four metal drums filled with the liquid across the rack. A perforated pipe distributes the hardener, as the machine moves along. Dragging canvas helps the spreading. Machine method saved two-thirds over usual hand method.

SHOVEL-CRANE REPORT ON THE OHIO TURNPIKE

Sub-contractor Al Johnson Construction Co., Minneapolis, Minnesota, uses a 30-ton Lorain Moto-Crane, model MC-524, on their contract to dig footings for the 154 ft.-Black River Bridge in Elyria. All in all, they have purchased seven Lorains.

MORE THAN 50 LORAINS SO FAR ON ALL PHASES OF CONSTRUCTION

A Lorain took the first bite of earth at the ground-breaking ceremonies for the Ohio Turnpike. Since then, more than 50 additional Lorains have gone to work to rush completion of this vast 241-mile super-highway by October, 1955. Lorains of all sizes and types—shovels, cranes, clamshells, draglines, hoes—on rubber-tires and crawlers (up to 61 tons capacity)—are fitting the needs of a long list of big-name contractors on this big job. In the rubber-tire class alone, Lorain Moto-Cranes outnumber all other makes combined.

Your jobs may not be Turnpikes, but you, too, can profit by the same Lorain advantages so well known to men that must beat the *big* deadlines at a profit. See your nearby Thew-Lorain Distributor now . . . learn all the reasons why a Lorain is your best buy.



More than 25 rubber-tire Lorain Moto-Cranes speed up and down the right-of-way to get work done. Sub-contractor Vogt & Conant, Cleveland, Ohio, 10-time Lorain owner, uses a 20-ton Lorain Moto-Crane to set 15-ton, 60 ft. long steel girders for this overpass. In the background, a 22½-ton, model MC-424 Moto-Crane, owned by Peter Kiewit Sons Co., uses a 1-yd. concrete bucket to pour abutments. Kiewit has purchased 36 Lorains.

A Lorain-820 Shovel, equipped with 2½-yd. dipper, is shown below digging a rock cut on another section of the Ohio Turnpike.

A Lorain crawler dragline handles ditch excavation as part of important drainage construction along 241-mile road.

Harrison Construction Co., Pittsburgh, Pennsylvania, have purchased a total of 55 Lorains. Below, one of their 1-yd. Lorain-50 Hoes digs a trench for a 36" corrugated cross-drain on one of their three contracts that total \$9 million.

OHIO TURNPIKE FACTS AND FIGURES

Estimated quantities:

Earth and rock excavation	29,500,000 cu. yd.
Fill or borrow	46,900,000 cu. yd.
Pavement concrete	7,860,000 sq. yd.
Bituminous shoulder surfacing	5,200,000 sq. yd.
Concrete in structures	582,000 cu. yd.
Steel	171,000 tons

STRUCTURES:

Bridges, drainage, overpasses, etc. . . . 612



THE THEW SHOVEL CO.
Lorain, Ohio

THEW LORAIN

MORE PROFIT

**...move equipment safely without costly delay
with a Talbert Low-Bed Trailer!**



Art Brockman, Inc. of Dearborn, Michigan using a Talbert Model T3D-60-RG Removable Gooseneck Trailer to transport a P&H 955A-LC Crane.

You gain more production hours from your equipment when you use a Talbert Removable Gooseneck Trailer. Relocation time is kept to a minimum because Talbert Low-Bed Trailers are specifically designed to handle more hauling jobs quickly and to provide easy — safe over-the-front-end loading. This type of operating flexibility increases your on-the-job earning capacity.

Send today for your free copy of Talbert Catalog 104 . . . it gives all the facts on profit-building Talbert Trailers.



THE TALBERT CONSTRUCTION EQUIPMENT CO.
7952 West 47th Ave., Lyons (Chicago suburb), Ill.

manufacturers of Talbert Low-Bed Trailers and Semi-Dump Trailers



Removing the gooseneck



Easy, safe front end loading



Replacing the gooseneck — rig ready to roll



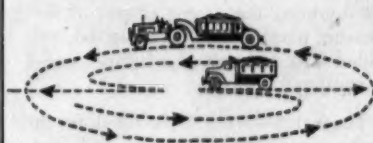
Athey SIDE DUMP TRAILERS

SAVE MONEY

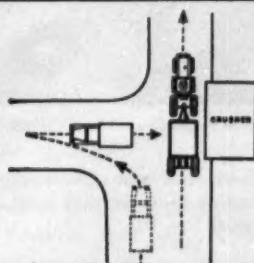
**5
WAYS...**



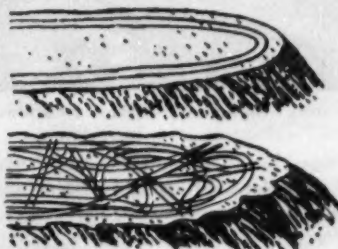
1 BY HIGH-SPEED DUMPING
WITHOUT STOPPING!



2 BY ELIMINATING DANGEROUS
CRISS-CROSS TRAFFIC!



3 BY REDUCING WORK SPACE
AT CRUSHER OR HOPPER!



4 BY CREATING ACCEPTABLE
FILL COMPACTION!



5 BY BUILDING THE FILL
OR DUMP AUTOMATICALLY!

Your Athey-Caterpillar Dealer can show you these 5 money-saving advantages—and many others—of the Athey PD20 or PD10 Trailers. Call on him for all the facts, or write for the new ATHEY PD20 SIDE DUMP TRAILER folder!

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5831 WEST SIXTY-FIFTH STREET
CHICAGO 38, ILLINOIS

CATERPILLAR

600,000 CUBIC YARDS OF BLACK GUMBO

Contractor finds Kansas reservoir job a challenge to men and machines

Part of a \$12,000,000 expansion program of Kansas Gas & Electric Co. is the construction of a reservoir on the Neosho River near Oswego, Kansas. The contract is being handled by Joseph L. Pohl, Nevada, Missouri.

The new excavation will add 50 acres to an existing reservoir on the site. When it is finished, the old reservoir will be dammed off, drained and deepened. Here water will be stored for doubling the power output of the Neosho plant and providing 66,000 added KW to meet the future needs of southeast Kansas.

The earthmoving is being done in sticky, water-soaked gumbo soil that makes the job tougher. The slippery ground offers poor traction, and earth balls up in the scrapers and buckets and clings to the bulldozer blades.

Nevertheless, the Pohl organization has stayed on top of the job and expects to complete it on schedule in November. One of the principal factors in licking these bad conditions is the use of Caterpillar* equipment.

There are ten Cat* track-type Tractors working on the reservoir — two D8s and two D7s pulling Caterpillar-built Scrapers; two more D8s and two D7s equipped with bulldozers; a D8 used as a pusher and a D4 pulling a sheepsfoot roller. In addition, a Caterpillar No. 12 Motor Grader works on the haul roads, and a Lorain dragline with a 2-yard bucket is powered by a Cat D13000 Engine.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.

*Both Cat and Caterpillar are registered trademarks—®



Left to right, Lee V. Anspaugh, project engineer; George Preston, foreman, and James Murphy, superintendent, for Pohl.



Positive ejection forces this load of wet gumbo from the No. 70 Scraper, pulled by a Cat D8 Tractor.

Superintendent James Murphy says: "Caterpillar-built machines stand up under rougher treatment, with less expense, than anything else we have run across."

On nearly any job where conditions are especially tough, contractors count on these rugged yellow machines to pull them through. They're built to take it. Your Caterpillar Dealer can supply ample evidence of low costs

for down time and repairs, big daily production and years of long, profitable work life.



In spite of the sticky going, the D8 with No. 85 Bulldozer handles a big blade load.

Too Low or Too High?

FROM CONTRACTORS bidding various types of jobs, and from one end of the country to the other, we keep hearing complaints about tough competition and too low prices. But are prices really too low—or are costs too high?

Among costs that often are higher than they need be are those of accidents and for insurance that helps to protect you from their more obvious financial consequences. The costs are high because far too many contractors refuse to give safety the importance it deserves. This fact is pointed up by cold statistics: Out of 40 industries reporting their accident experience, construction stands a shocking sixth highest.

The record, however, is not all black. That many enlightened contractors realize the value of safety was evidenced by the representation at the Construction Section meetings during the National Safety Congress in Chicago late last month. The intelligent ones know that a consistently good safety record, with resultant lower insurance premiums, can give them a competitive advantage over accident-prone don't-give-a-damn outfits when bidding future jobs.

The cost of insurance is only part of the accident expense picture, of course. And high though the direct cost of accidents may be, indirect costs are far higher—4.5 times as much, says one thorough construction study made by the Bureau of Labor Statistics. You're paying plenty for such things as time lost while other workers aid the injured or just rubberneck and discuss the accident; for production lost by a damaged machine; for your time while investigating. Indirect costs of accidents may never show up as such on your accountant's books, but they can often distort a final profit picture pretty badly.

A good safety program can help prevent this needless waste of money. But any safety program, to be successful, first must have the whole-hearted support of management. Make no mistake; whole-hearted support does not mean just tacking up

safety posters. It means laying out your job to eliminate hazards right from the beginning. It means actively protecting your men from such hazards as are unavoidable. And it means constantly re-alerting them to the familiar simple dangers they usually prefer to ignore.

This last requirement is generally the hardest for all concerned. For when men become casual about a hazard, management's critical evaluation of that hazard too often suffers in a similar way. The danger none the less remains. Too many contractors have found out too late—and in an expensive way—that constant vigilance is required to avoid the trap of apathy.

While it is true that initiation of a safety program is a proper function of management, it is also true that it cannot succeed without active participation and support right down the line. A good program deserves that support. Safety is not a panty-waist procedure. The man who takes unnecessary risks is no hero. He not only makes it tough on his employer and fellow workers, but he also is endangering his own economic well-being. Don't forget that compensation rates do not measure up to normal construction wages, by a long shot.

We have not discussed the humanitarian aspects of safety. They are of prime importance, and they should be obvious. Yet in this materialistic age, a threat to life often seems less important than a threat to the pocketbook.

So, strictly from the standpoint of economics, it is absurd to ignore safety and the high cost of accidents. A good safety program conscientiously administered and followed will pay off for workers and management alike. It will help keep your men earning a full pay check. It will both increase morale and up productivity. It will cut job expense. It will improve your competitive position. Who knows: It might enable you to take—and profitably—those jobs you now say the other fellow is bidding too low.

Three Major Projects Under Way This Year Show ...

Floating-in Speeds Bridge Erection

BRIDGE BUILDERS continue to find new opportunities to cut superstructure costs by preassembling and then floating large spans in place, rather than erecting them at the site by conventional methods.

At least three of the major floating-in jobs under way this year turned up some new methods of handling the big units. On the New York Thruway's Hudson River bridge, for instance, 19 deck trusses and two huge falsework spans are being set in place by a combination of tide, jacking, and water ballasting. Only 30 mi south on New York City's East River, a vertical lift span assembled next to shore had to be jacked 5 ft above its falsework to make it clear projecting pins on the piers.

Another big job, Florida's Tampa Bay Bridge, featured a modified deck truss that took three separate boat rides before it was finally set on its home piers. The first two rides carried it between secondary piers of a cantilever span where temporary bents on top of the truss supported anchor arm steel during erection.

The biggest floating job, by far, is at the Thruway bridge mentioned before. In addition to two 517-ft falsework spans for the cantilever anchor arms, U. S. Steel's American Bridge Division is floating deck trusses that tower more than 100 ft above water. The spans are assembled up-

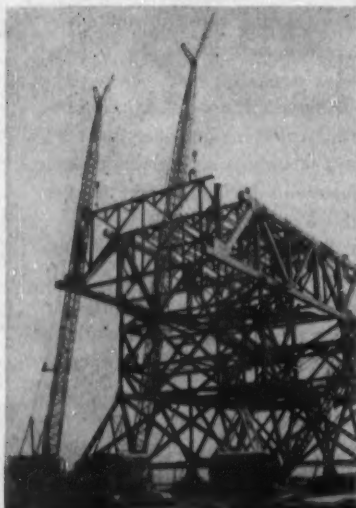
stream on one of two adjustable falsework sections that straddle dredged-out slips. When a truss is assembled, two railroad car floats mounting four 500-ton jacks move into the slip, jack the complete unit off its supports, and then wait to be towed down the river. At the bridge, the truss-carrying floats are eased between piers by tugs. Final positioning is done with hand winches anchored to the piers with cables. As soon as the truss is directly over its supports, the jacks are retracted, water is pumped into the floats, and the truss comes to rest.

Clearances, plus a swift current, were the major problems for Harris Structural Steel Corp. on the East River bridge. To clear the centering pin on the piers, the 419-ft span was first jacked up with four columns of multiple jacks. Then large tugs and four winch-connected anchor lines maneuvered the floating assembly away from shore and slowly swung it between the lift towers. Jacking crews, coordinated by portable radios, lowered the truss.

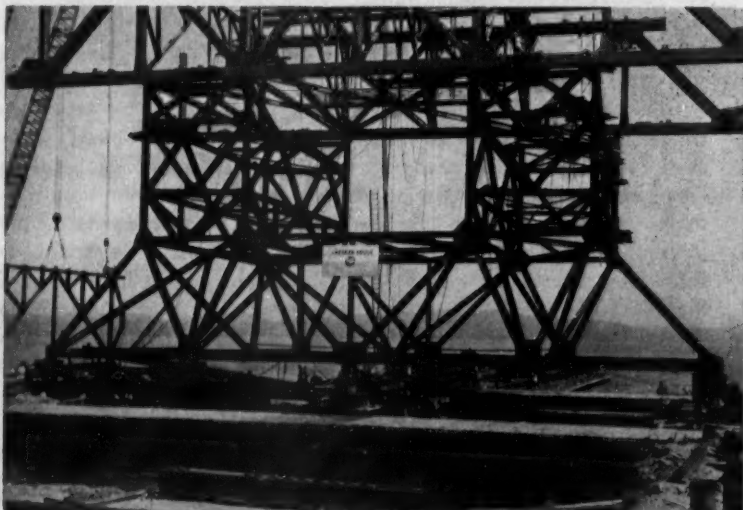
At Tampa Bay, the American Bridge Division assembled four deck trusses on adjustable bents, which were supported on a temporary stage adjacent to one of the approach-girder spans. After the assembled trusses were floated in place by tugs and hoists, tide and water ballasting took over to lower them on their supports.

1. Repeating Spans Simplify Assembly

Nineteen similar deck trusses float down Hudson River for N. Y. Thruway Bridge



PREFABRICATED PANEL for deck truss is set in place at yard by two Manitowoc cranes with 140-ft booms and 30-ft jibs.

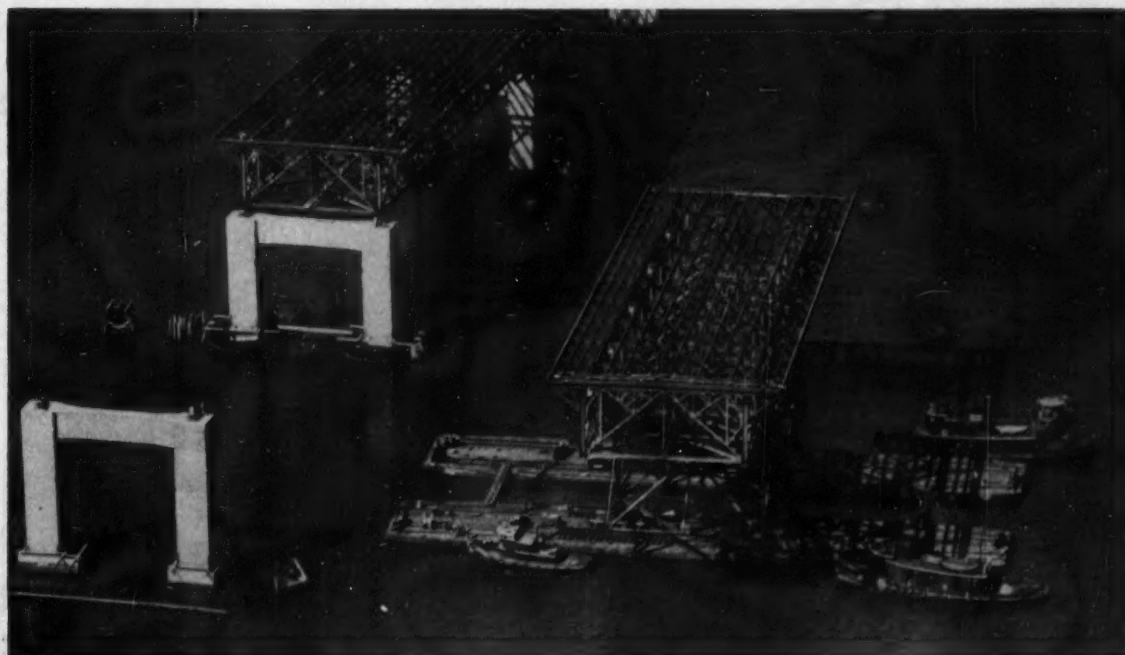


FALSEWORK on which trusses are assembled is adjusted each time for height, grade, and superelevation. Top falsework panels are bolted to make them easy to replace. Less than a day usually is required to make the adjustment. Two sets of falsework are used.



ASSEMBLED TRUSS moves into river 12 mi upstream from bridge, as second truss nears completion. During assembly, falsework straddles the slip and rests on six supports. When the truss is ready

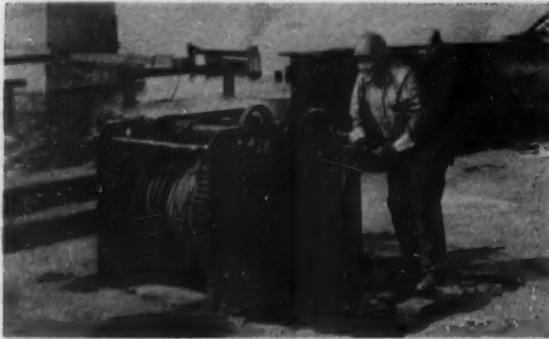
to be transported crane bridges are lifted out and railroad car floats move in. Four 500-ton grillage-mounted jacks on the floats raise the falsework off its supports.



FLOATING TRUSS 250 ft long and more than 100 ft above water is moved close to its piers. Tugs first maneuver it near the empty pier to prevent possible collision with the adjacent truss. Final

positioning is done with bridles on top of the piers and with eight hand-winches mounted on the floats and tied to choker slings wrapped around the bases of each pier shaft.

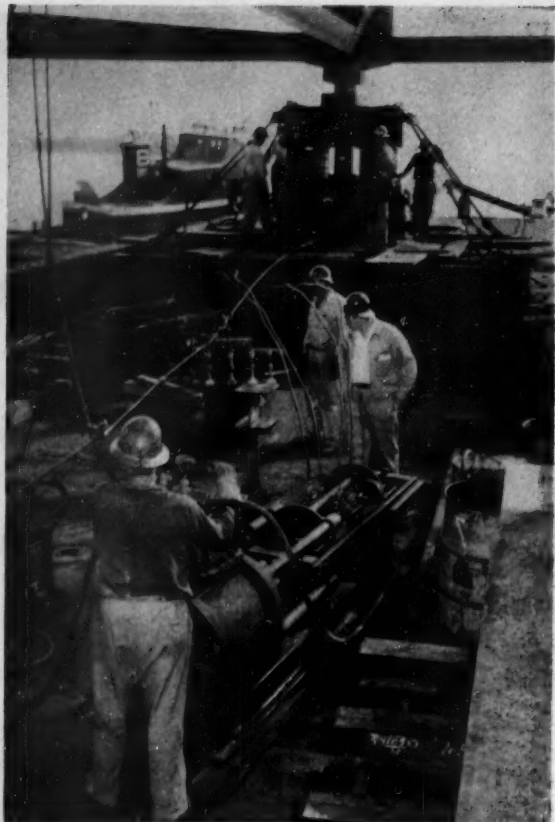
THREE BRIDGE PROJECTS . . . Continued



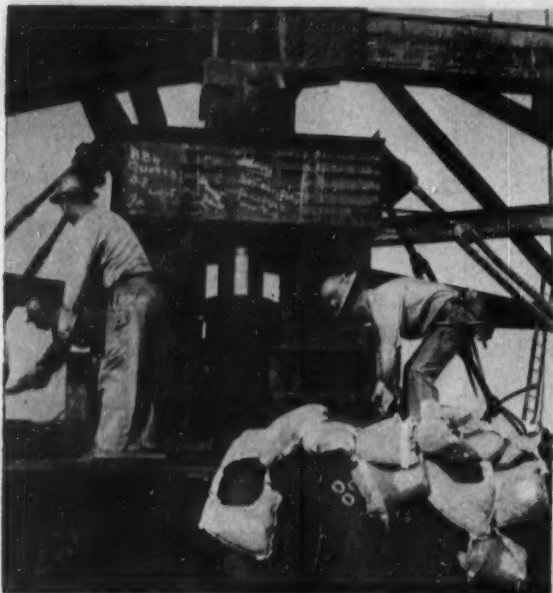
HAND-WINCH takes up on anchor line, as floats move closer to final position. Lines from four winches on each float are reeved at an angle to the piers for exerting a 2-way pull.



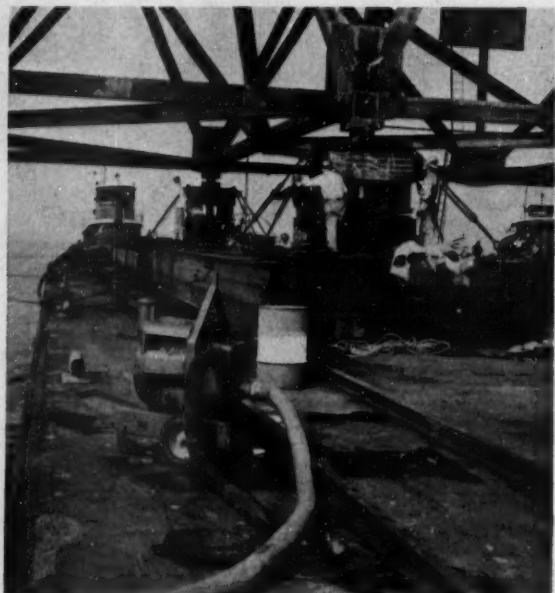
WIRE-ROPE BRIDLES are connected to rockers as soon as the truss moves close enough to be reached by steel workers. A hand-operated come-along tightens the bridle, pulling the truss into position, and helping the float winches to hold it.



JACKS RAISE TRUSS slightly to free top shim, as air piston, powered by portable compressor, activates Watson-Stillman 4-unit hydraulic pump. Steel tubing connects pump to two 500-ton jacks. Identical jacking equipment is used on each float.



SHIMS ARE GRADUALLY REMOVED, as jacks retract and truss comes down. To prevent a sudden drop in case of a failure in the jacks or the hydraulic line, workmen keep the dropping gap small by pulling out only one shim at a time. Note how life jackets are kept handy. Thick fog on the river can make the trip dangerous.



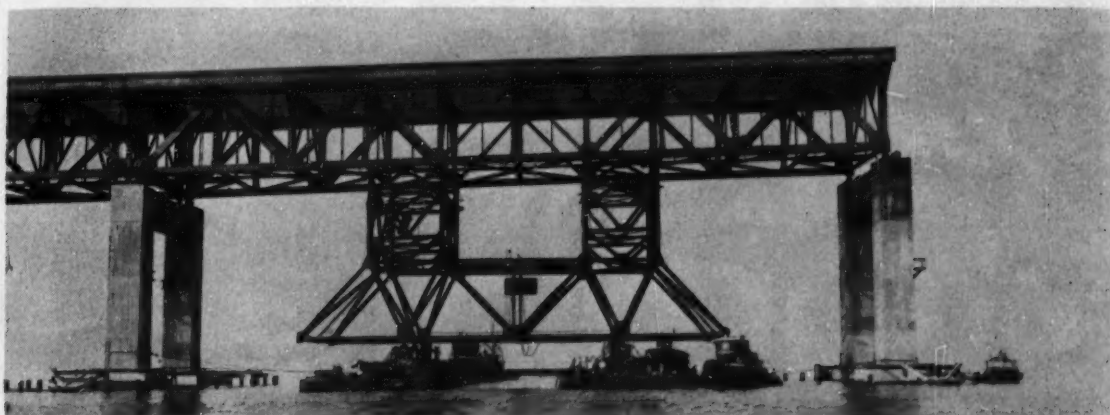
PORTABLE PUMP fills up float compartments to help lower the truss on its supports. Eight Marlow 4-in. pumps are easily shifted about to add water to the proper compartment. To lower the fixed end of the truss first, jacks are retracted on only one float at a time. Pumps, however, are operated continually.



CONTROL VALVE on hydraulic line is opened to release water pressure, retracting jacks still further. Engineer checks signals of workmen on top of piers to control speed of lowering. Jacks have a run out of 25 in. The crew of 15 steel workers on the float is supplemented by other crews on the site.



HALF-BEAM SUPPORTS under jacking assembly are removed, one at a time, and replaced with shims to permit jack to retract its full 25 in. To reduce the number of beam supports required, two of the four beams are cut in half. Vertical rods on each side of the jack keep the movable steel framework plumb.



TUG BOATS STAND BY to move falsework out from under seated truss as soon as jacking and water ballasting lower it clear. Complete operation of towing downstream, placing, and securing re-

quires about 6 hr. Falsework is returned the same day. With good weather, one truss can be assembled every week. F. Elliot is superintendent and F. Sedlacek is field engineer.

2. Lift-Span Jacked and Floated in Place

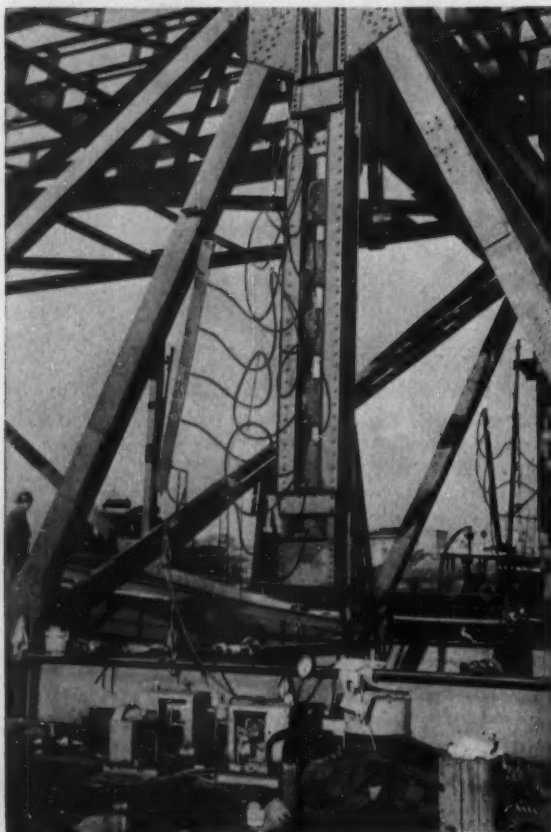
PREASSEMBLED LIFT-SPAN for New York City's East River bridge is maneuvered into middle of river at high tide with seven tugs. The 419-ft truss, assembled next to shore near the bridge, is moved by pivoting its two supporting barges back and forth at the end of a swinging rope. Workmen feed rope out from shore, as the assembly moves away. Truss has already been jacked about 5 ft above its falsework to make it clear projecting pins when floated between lifting towers.



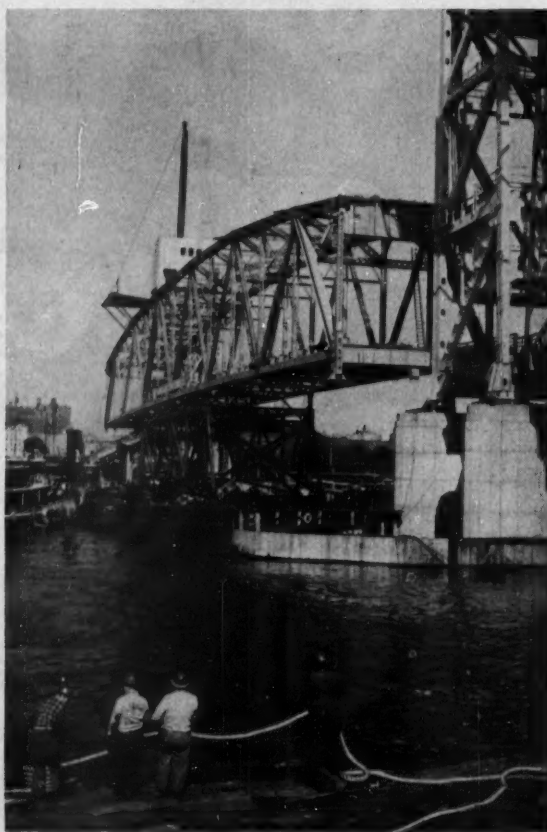


FLOATING ABOUT 50 FT above the river, the 1,000-ton truss is nudged close to its piers. Job superintendent, John Schnier, positioned at the center of the falsework, shouts instructions through a powered megaphone. Crews at each end of the truss, too far

away to hear the megaphone, communicate with the superintendent by walkie-talkie. After jacks are fully retracted, out-going tide lowers barges, and falsework moves out. Complete operation of floating and placing required about 5 hr.



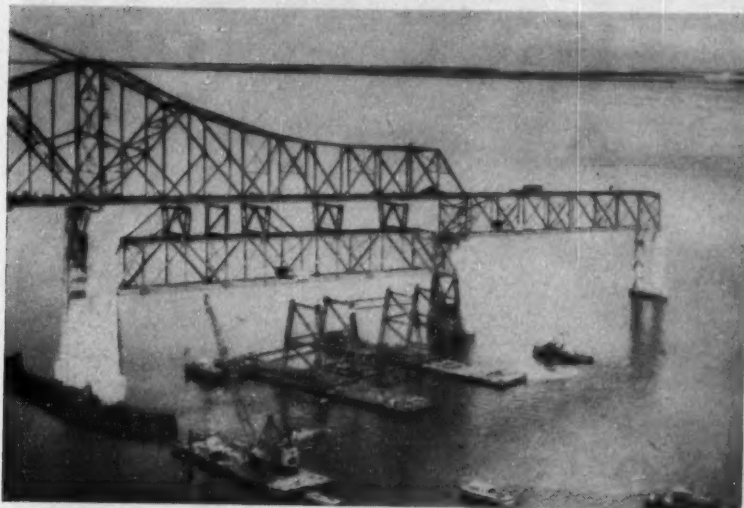
SIX 300-TON JACKS fitted inside a column in the falsework keep the truss raised about 5 ft. Two columns of jacks on each float are powered by Rodgers hydraulic pumps through a manifold system of $\frac{1}{2}$ -in. rubber hose. To prevent a sudden drop in case of failure, vertical dowels are connected both to the falsework and the moveable struts above the jacks. Workmen on platforms keep nuts turned close under the moving assembly.



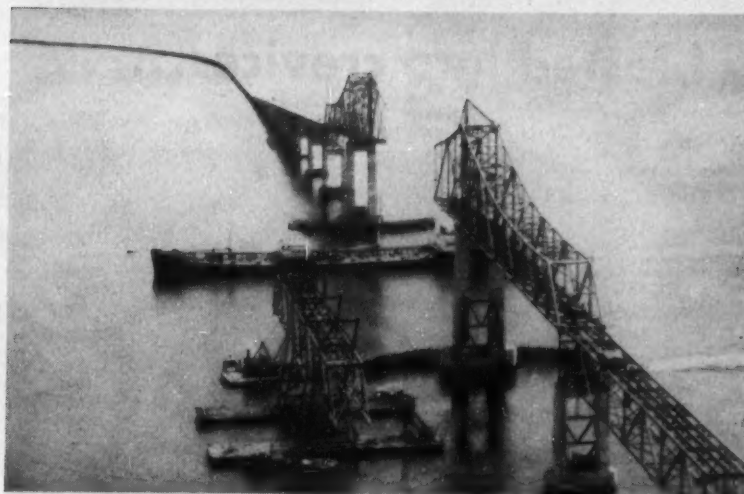
COORDINATION OF ALL CREWS is especially important, as truss moves between lifting towers with only $1\frac{1}{2}$ ft of clearance at each end. Close positioning is done mostly with 2-drum Lidgerwood hoists mounted on the floats. Three-part lines from each drum tie into 1-part lines anchored on shore. When truss gets close enough, workmen connect the ends to towers with wire-ropes. Come-alongs tighten the bridle.

3. Deck Truss Doubles as Falsework

A modified deck truss on Florida's Tampa Bay Bridge was twice used as falsework under cantilever anchor arms before being set on its own piers



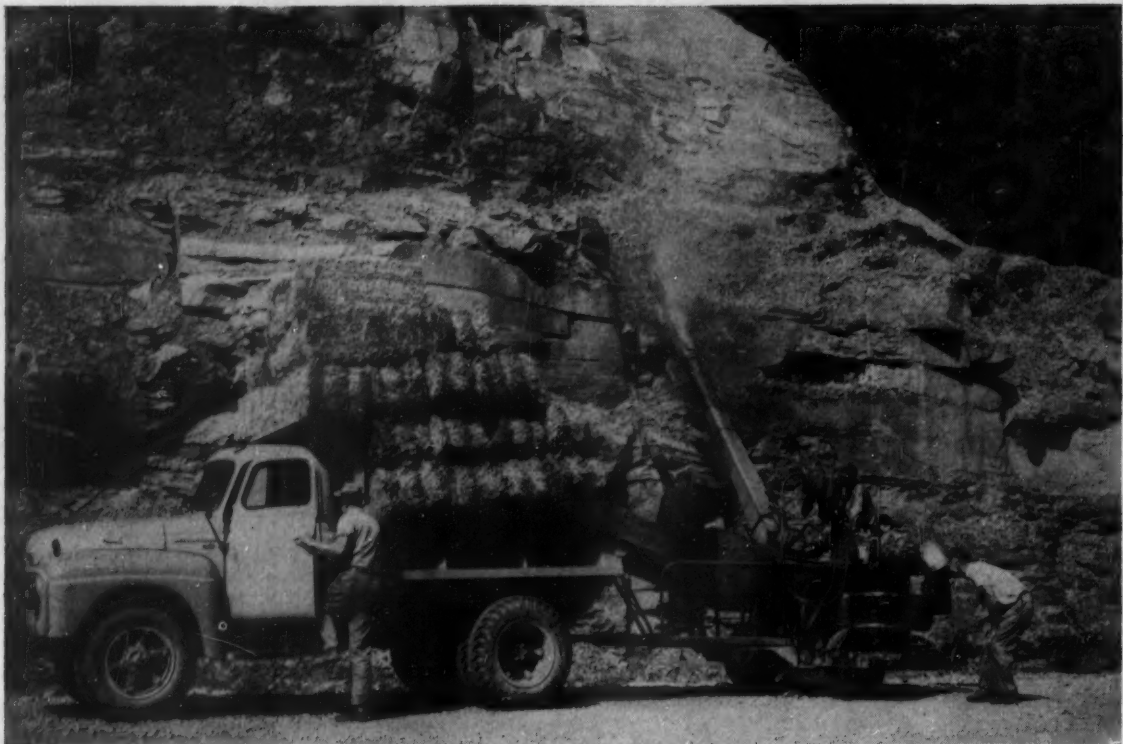
←
FALSEWORK TOWERS supported on barges move under modified deck truss which had been used as falsework for erecting the two anchor arms of a cantilever span. The 290-ft truss was fitted with lengthening panels at the ends and erection bents on top before it could be used as falsework. All the four deck trusses on the job were assembled on a temporary stage built in the middle of the bay next to one of the deck-girder approach spans. A traveling crane mounted on the approach span set the steel. Secondary spans on each side of the 864-ft main cantilever consists of a 360-ft anchor arm, two 290-ft deck trusses, six 140-ft deck-girder spans, and six 100-ft deck-girder spans.



←
FLOATING TRUSS moves away from temporary supports under anchor arm. Because of the high winds and deep water, American Bridge Division chose the floating-in technique for the deck trusses and the anchor-arm falsework. Conventional erection methods would have required heavily braced pile-supported bents under six spans. Main span was erected later from both ends by two 10-ton travelers. Powerful jacks made the closure at the center. The cantilever span is part of a 5,621-ft steel bridge, the largest structure on the 15-mi Sunshine Skyway that crosses Lower Tampa Bay. The rest of the bridge consists mostly of hydraulic fill, trestles, and a bascule bridge.



←
ERECTION BENTS remain on top of modified deck truss, as it is finally set on home piers. After the tugs brought the assembly in close, barge-mounted hoists connected to heavy sea anchors did final positioning. Water was pumped in to the barges to lower the truss in place. Erection bents and extensions were removed later. The floating operation was similar on the previous spans, except that the towers were hauled back to the stage each time and set in place for the next assembly. E. Nimmergood was superintendent, and E. Powers was field engineer for American Bridge Division.



Asphalted straw blasted into crevices...



...forms tough blanket to help new grass

EROSION CONTROL and landscaping along the steep banks lining the West Virginia Turnpike were started immediately after grading was completed—long before concrete was poured in most areas.

Months of development work, begun when the new super road was first started, have paid off in bright, green stands of new grasses growing in the dust and rubble of areas that had to be blasted, from between rocky crevices on almost vertical banks, and along other types of terrain on large sections of the road.

But seeding such a roadside and getting grasses to make a healthy growth on its steep banks called for more than ordinary ingenuity. And that ingenuity came from Maurice A. Mendel, supervisor of roadside development for the West Virginia Turnpike Commission. After dozens of tests with seed varieties and types of fertilizers, he selected the best combinations. Then a new type mulch spreader and a special spraying rig were teamed up to fit the West Virginia conditions.

Asphalt Droplets Hold

A Finn mulch spreader, made by Finn Equipment Co., Cincinnati, Ohio, chews up bales of straw at a fast clip and shoots the pieces out through an 8-in. delivery pipe for distances up to 75 ft. Three nozzles at the end of the pipe spray a fine mist of emulsified asphalt on the straw as it leaves the pipe. Straw and asphalt blend in the air and hit the roadside together to form a substantial knitted covering over the slopes.

The asphalt droplets become semi-dry within a few minutes and hold the straw in place. Straw mulches have been held thus through 50-mph winds and under heavy rains.

A second crew follows some distance behind the straw blowers. They spray the straw-blanketed areas with a mixture of 125 lb of grass seed, 640 lb of Arcadian 12-12-12 fertilizer and 850 gal of water. At some points, several pounds of various tree seeds are tossed into the mixture.

The straw holds both the soil and seed while grasses are getting a foothold, and the rich fertilizer supplies necessary nutrition right away. Arcadian fertilizer is made by the Nitrogen Division of Allied Chemical & Dye Corp.

Plant foods had to be available



MIXTURE OF SEED, FERTILIZER AND WATER is sprayed on top of matted asphalt-straw mulch from truck moving along on top of graded right-of-way. Erosion control preceded paving in an effort to hold every bit of precious soil.



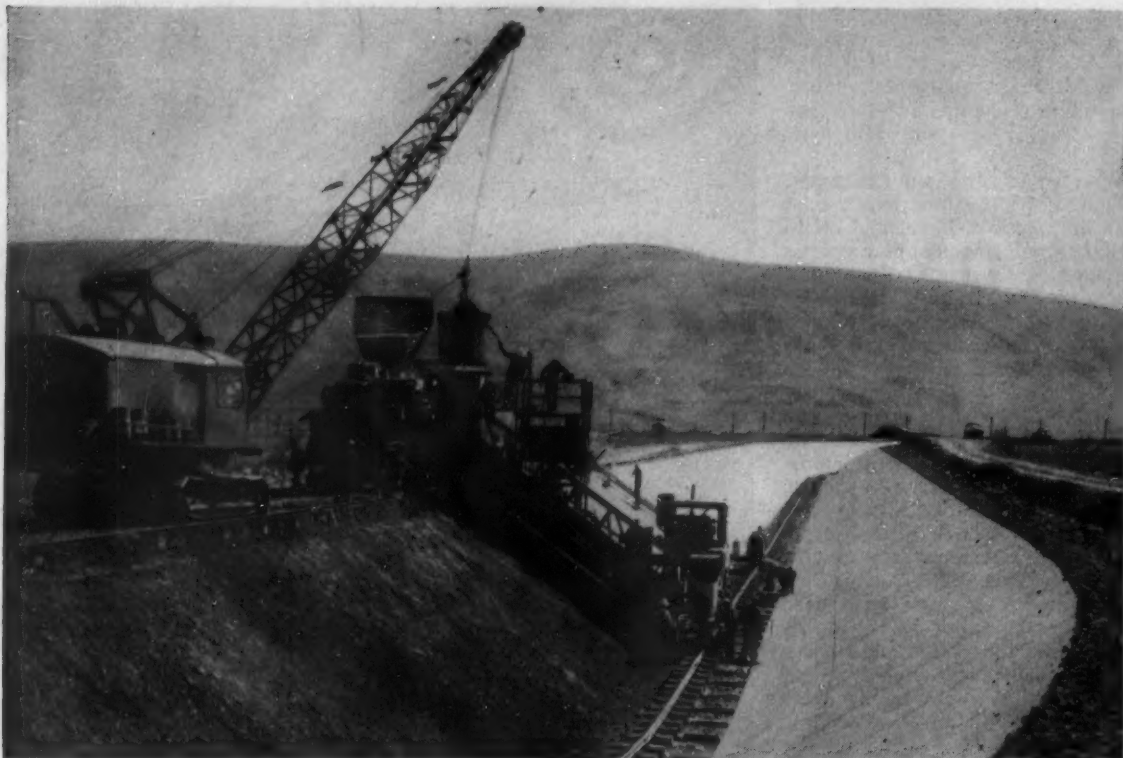
CHARGING THE TANK of water with fertilizer and grass seed. Behind tank on Brockway truck is a pressure pump for sprayer and a built-in agitator to keep grass seeds in suspension.

for immediate feeding and also to keep the plants vigorous until fertilizing time in the fall. And it had to dissolve readily in water, without clogging hoses and nozzles. Arcadian dissolves in 1½ min and has proved its ability to nourish young grass on practically every type of ground except solid rock and coal.

Mendel studied many grasses before he settled on six varieties native to the state. The mixture

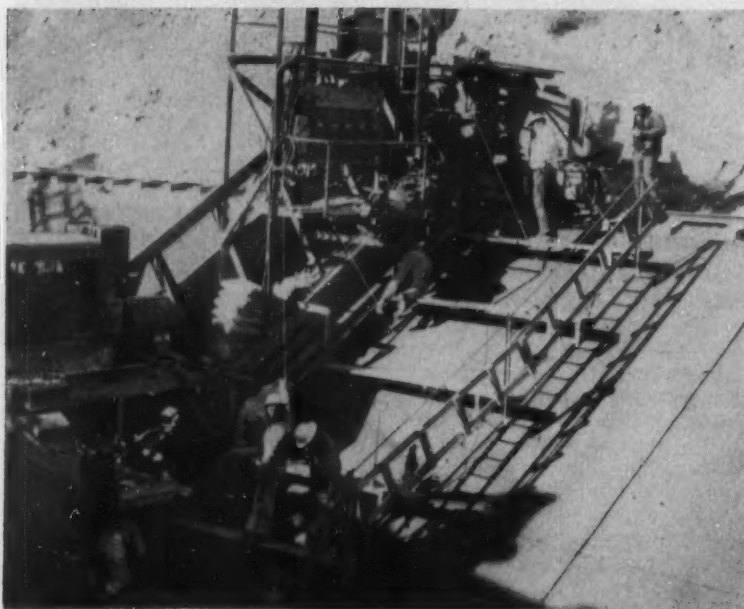
was proportioned as follows: Three annuals—25-lb rye grass, 20-lb Korean lespedeza and 10-lb red-top clover; three perennials—30-lb Kentucky 31 fescue, 10-lb perennial rye and 20-lb perennial serica lespedeza.

In addition to halting erosion of steep banks almost at once, Mendel has trimmed estimated landscaping costs for the Turnpike from \$750,000 to \$225,000 and established an efficient system.



SINGLE-SLOPE CANAL LINING MACHINE incorporates most of the principles found in other canal equipment, except that it is adaptable to any size ditch, easy to operate and can be moved at a fraction of the cost, as compared with heavier equipment.

Single-Slope Liner Easy to Move

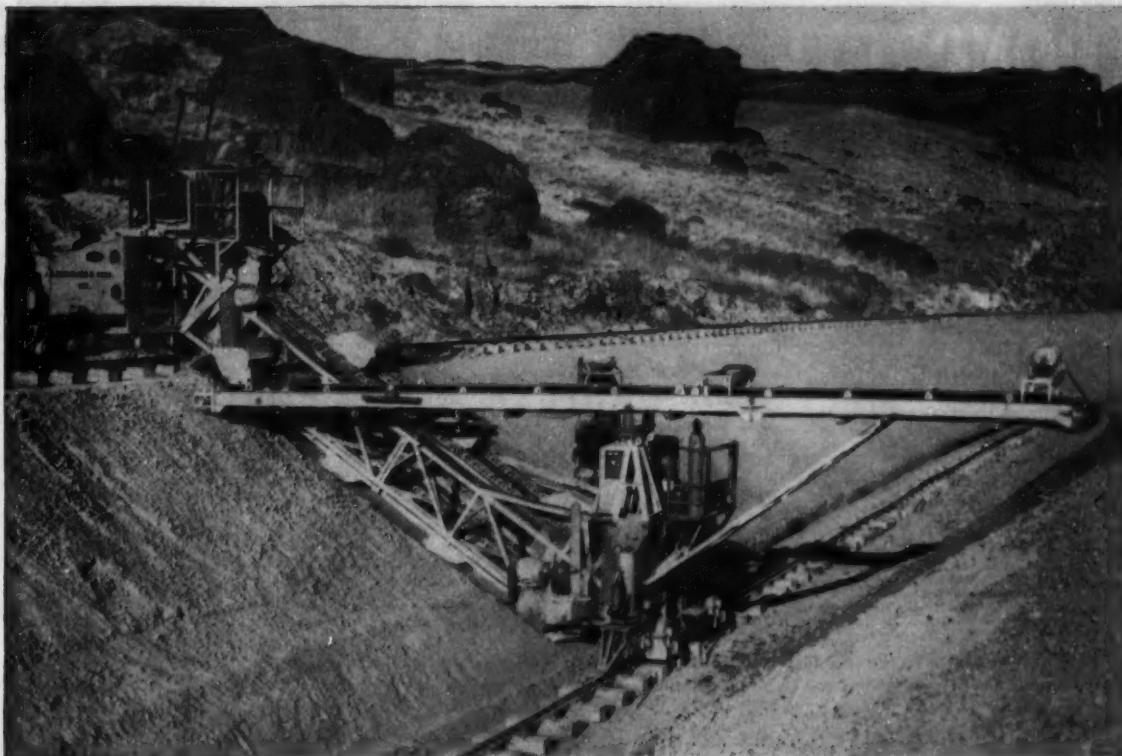


CONCRETE FINISHERS work from platforms attached to rear of the liner. Vertical joints are made with a grooving plate and horizontals with a roller-type knife edge.

A SINGLE-SLOPE canal lining machine, designed by Contractor J. A. Terteling & Sons, Inc., of Boise, Idaho, was recently introduced on the Bureau of Reclamation's Kennewick project in Eastern Washington. Its use saved an estimated 30% in labor costs.

The machine, used on an 8-mi second section of the Chandler canal contract, utilizes most of the principles developed in previous canal equipment, but has the advantage of being adaptable to any size ditch, easier to operate and readjust, more economical to move.

According to Al Perry, project superintendent, the new equipment, being lighter and more flexible, was moved five times for bench flumes, railroad crossings and bridges on the Chandler job at a cost of only \$2,500. The moves, made at night, did not interrupt normal operations. Heavier, conventional-type liners and trimmers cost far more to move out of the ditch, according to Perry.



TRIMMER, electrically powered, operates along two tracks. Buckets scoop up excess subgrade material and deposit it on a stacker belt

which carries material to opposite slope. It averaged 1,000 ft per day and saved 50% in wasted backfill material.

The trimmer used on the Chandler project is powered by a Caterpillar 37.5-kw diesel electric set and runs on two tracks—one on the upper berm and one along the center line of the canal. The drive units are operated by three-phase electric motors.

Each drive unit has two sets of wheels which operate from a chain-and-sprocket drive through a gear-reduction system. Speeds vary from 9 in. to 4 ft per min.

The trimmer was able to average 1,000 ft per day, saving up to 50% in wasted backfill material because of the one-slope method. The machine deposits the excess from the first side on the opposite slope so there is waste from only the second slope instead of both. The saving in wasted material often makes it possible for a contractor to estimate more accurately when figuring a job. Conventional equipment removes all excess material from the ditch.

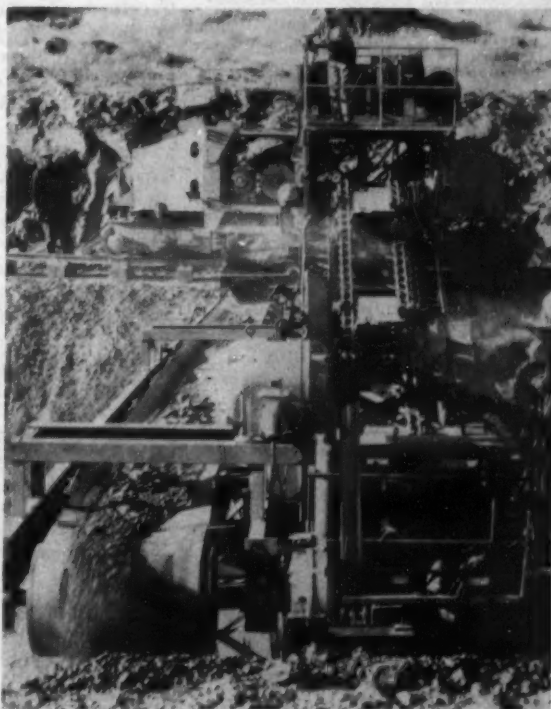
A Ford industrial engine powers the main bucket line on the trimmer. Buckets have teeth on the leading edge to act as a ripper, while the other part of the edge planes the subgrade surface. Moldboards behind bucket drive complete smoothing operation.

The trimmer also features a ditching attachment to excavate for an open joint concrete under-drain to carry away sub-surface water from an irrigation project on land above the canal section.

Trimmed material is dumped into a hopper and carried to the stacker belt by a transfer belt.

Elevation control is achieved by hydraulic jacks on each set of drive wheels. These jacks operate independently, and wire guide lines on hubs offset from

(Continued on page 72)



SPECIAL DITCHING ATTACHMENT on trimmer shown at right, excavates for open-joint concrete under-drains. A crew of three, a foreman, operator and oiler operate the trimmer.

CONCRETE MIXING AND PLACING

DESIGN CHARACTERISTIC	Class 1 Light and Medium Wall Forms Framing up to 3 x 6 maximum	Class 2 Slab and Deck Forms Framing up to 3 x 6 maximum	Class 3 Heavy Forms and Falsework
Extreme Fibre Stress in bending—"F"	1800 p.s.i.	1600 p.s.i.	1200 p.s.i.
Modulus of Elasticity—"E"	Framing 1,600,000 Sheathing 1,200,000	Framing 1,600,000 Sheathing 1,200,000	Framing 1,600,000 Sheathing 1,200,000
Limit of Deflection—"D"	1/270 or 1/8" maximum	1/360	Depends on structure and span
Compression as Column—"C"	1200 p.s.i.* Note: Adjust for l/d Ratio	1200 p.s.i.* Note: Adjust for l/d Ratio	1200 p.s.i.* Note: Adjust for l/d Ratio
End bearing $\frac{1}{2}$ to grain	1200 p.s.i.	1200 p.s.i.	1200 p.s.i.
Side bearing $\frac{1}{2}$ to grain	Pine 500 p.s.i. Fir 450 p.s.i.	Pine 500 p.s.i. Fir 450 p.s.i.	Pine 400 p.s.i. Fir 400 p.s.i.
Horizontal Shear—"H"	300 p.s.i.* *For $H = \frac{3v}{2bh}$ formula Includes allowance for relief of shear load adjacent to supports and absence of checking in light timber.	250 p.s.i.* *For $H = \frac{3v}{2bh}$ formula Includes allowance for relief of shear load adjacent to supports and absence of checking in light timber.	150 p.s.i.* *Use Forest Products Laboratories Shear Formula in detail.

Refer to Fig. 9 for formulae, explanation of terms, etc. Above values are for No. 1 Grade Pine or Douglas Fir as follows:—
For Pine: Sheathing—No. 1 boards or (plywood); Framing—No. 1 Short Leaf Dimension for 2 x 3 to 2 x 12 nominal size, No. 1 Small Timbers for 3 x 3 to 4 x 6 nominal size, No. 1 Utility Timbers and Heavy Joists for 3 x 8 and wider, 4 x 8 and wider, 5 x 5 and larger nominal size.
For Fir: Sheathing No. 1 boards or (plywood); Framing No. 1 Dimension 2 x 3 to 4 x 12 nominal size, No. 1 Timbers, Posts and Stringers for 5 x 5 and larger nominal size.

Fig. 8 . . . WOOD FORM WORK is divided into three classes by the authors for consideration of limiting design values. Classes are de-

termined with reference to importance of the job, its nature, location, and size of framing members used.

Design Analysis

• **Classes of formwork control design values for wood forms.** The underlying principle is that lighter and less important forms can be designed with appropriate assumptions for average conditions whereas heavy and more important formwork must be designed in detail in the same manner as permanent engineering structures.

The degree of safety required on a form job depends upon its nature, location and the size of framing members used. For example, a slab form on posts or suspended in the air presents a much greater safety problem than ordinary 8-ft high foundation walls on the ground in an excavated area.

We divide formwork into three classes for consideration of proper design values. The three classes of formwork with the limiting design values are indicated in Fig. 8.

• **Design of formwork involves a step-by-step analysis of sheathing and framing members.** The class of work governs assumptions and methods which may be employed. Fig. 9 covers average formulae which have been found workable on the three classes of formwork, as determined in Fig. 8. It will be noted that additional safety is brought into both Classes 2 and 3 formwork by reduction of unit stresses permitted in Fig. 8

and, in the case of Class 3 formwork, it is necessary to design in full detail, as called for in Fig. 9.

• **On slab deck and falsework forms,** it is necessary to figure a live-load allowance—to be added to the dead load of the concrete and forms when computing form loads. This also serves to increase safety factors for this relatively important work. Live-load allowances on ordinary slab work vary from 40 to 75 psf. New York State, for example, requires 50 psf.

In our own work, we are inclined to the use of 50 lb on light slab forms supported on posts in Classes 1 and 2, and 75 lb on formwork supported from hangers over steel beams for Classes 1 and 2.

The reason for the increase in the live-load allowance for suspended forms is that the safety factor figured for the posts is substantially greater than the safety factor normally figured for form hangers, and the increase, in our opinion, is justifiable under this circumstance.

• **Design data for allowable loads on the framing members of wall**

forms at various concrete pressures are given in graphs (Figs. 10 to 15). These charts are based on data from Figs. 6 and 7 and cover capacity and spacing of the individual members of a form assembly.

On the general subject of design, the National Lumber Manufacturers Association has available a handbook called, "Wood Structural Design Data," which contains many detailed tables on capacity of joists, posts, etc., and covers design formulae and details, as may be needed for falsework or heavy framing. This book can be obtained by designers from the Association office in Washington, D.C. We have found it very useful.

Ties and Anchors

• **Tie and anchorage devices are interdependent with the design of forms.** A design balance between structural elements of the form and the safe load of ties and anchors is essential for an effective and economical setup. Form ties and anchors must be capable of withstanding anticipated loads which will be imposed on the forms in all directions. Battered forms must be tied down against uplift, as well as restrained against the horizontal pressure load.

Fig. 16 illustrates three common types of form ties and three com-

CORRECTION—In the article on form planning in the October issue Figs. 5 and 6, head pressure diagrams, appear on page 122. Their captions are placed correctly, but the two diagrams were published in reverse order.

10a. How to Plan Forms in Detail

By ALAN H. PILLING and
MARTIN W. BOLL

Load and Stress Conditions	Class 1 Light and Medium Wall Forms— Framing up to 3 x 6 maximum	Class 2 Slab and Deck Forms— Framing up to 3 x 6 maximum	Class 3 Heavy Forms and Falsework
Framing Conditions for consideration of Bending Moment, Deflection and Horizontal Shear Loads.	Sheathing—Simple Span Case A Sheathing—Partially Continuous* do B Studs—Simple Span Case A Studs—Partially Continuous* do B Wales—Partially Continuous* do C Note: *Members continuous over 3 or more supports are considered partially continuous.	Sheathing—Simple Span Case A Sheathing—Partially Continuous* do B Studs—Simple Span Case A Joists—Partially Continuous* do B Wales—Partially Continuous* do C	Use Handbook Data for exact conditions of Moment—Deflection and Shear Loadings and Stress Computations*
Bending Moment—"M"	Case A: $M = \frac{WL}{8}$ Case B: $M = \frac{WL}{10}$ Case C: $M = \frac{WL}{9}$ *For Wales use W = total uniform load per span		See note above
Extreme Fiber Stress—"f"		$f = \frac{M}{S}$	Design in detail
Deflection—"D"	Case A: $D = \frac{5WL^3}{384EI}$	Case B & C: $D = \frac{3WL^3}{384EI}$	See note above
Shear Reaction—"V"	Case A: $V = R$	Case B & C: $V = .6W$	See note above
Horizontal Shear Stress—"H"		$H = \frac{3V}{2bh}$	Use Forest Products Laboratory formulae and instructions in detail.
Compression as Column—"c" Limit Column Length to $\frac{L}{d} = 50$ maximum and cross brace as required.	for $\frac{L}{d} < 11$ for $\frac{L}{d}$ of 11 to 23 for $\frac{L}{d} > 23$ & < 50	$P = Ac$ $\frac{L}{d} = 11$ to $15 - P = .95 Ac$ $\frac{L}{d} = 15$ to $19 - P = .85 Ac$ $\frac{L}{d} = 19$ to $23 - P = .67 Ac$ $P = A \frac{438400}{(L/d)^2}$ for Columns to 6 x 6 max. nominal size	Design in detail as Short, Intermediate and Long Columns for L/d ratios. Use Forest Products formulae for Intermediate Columns and Euler formulae for long columns.
This data provides assumptions and short cuts for ordinary form problems in Class 1 and 2 form work based on conservative analysis of average conditions. For special conditions not covered design in detail.	Notes: M=Bending Moment W=Total Uniform Load in pounds L=Span in inches f=Extreme fiber stress—p.s.i. S=Section modulus D=Deflection of beam in inches E=Modulus of elasticity—p.s.i. I=Moment of inertia	V=Total Vertical shear at supports R=Reaction H=Horizontal Shear Stress—p.s.i. b=Breadth of beam in inches h=Height of beam in inches P=Total concentrated load A=Area of cross section c=Compression stress—p.s.i. d=Least Dimension in inches	For data on detailed timber design refer to an Engineering Handbook, or "Wood Structural Design Data" as published by Nat'l Lumber Manufacturers Association which contains data and tables.
Note: For Limiting Design Values of "f," "H," "c," & "D" Refer to Fig. 8			

Fig. 9 . . . BASIC DATA for wood form design includes average formulae that have been found workable on the three classes defined in

Fig. 8. Additional safety is brought into classes 2 and 3 by reduction of unit stresses permitted.

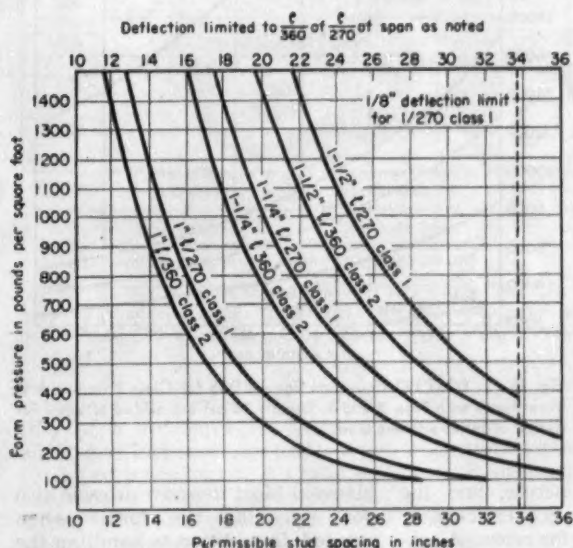


Fig. 10 . . . SHEATHING DEFLECTION—all figured D45 for Class 1 and 2 formwork partially continuous, in accordance with Figs. 8 and 9. For simple span use 60% of loads above for same stud spaces.

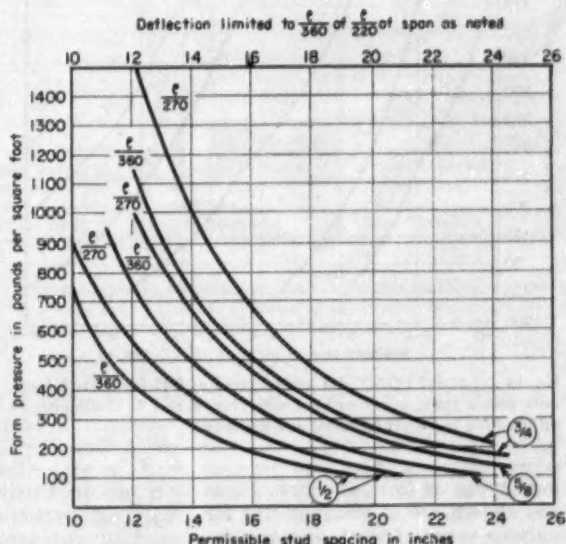


Fig. 11 . . . PLYWOOD DEFLECTION—modulus of elasticity assumed 1,600,000. Curves apply when grain of face plies is parallel to span. When used with grain parallel to supports, reduce the loading.

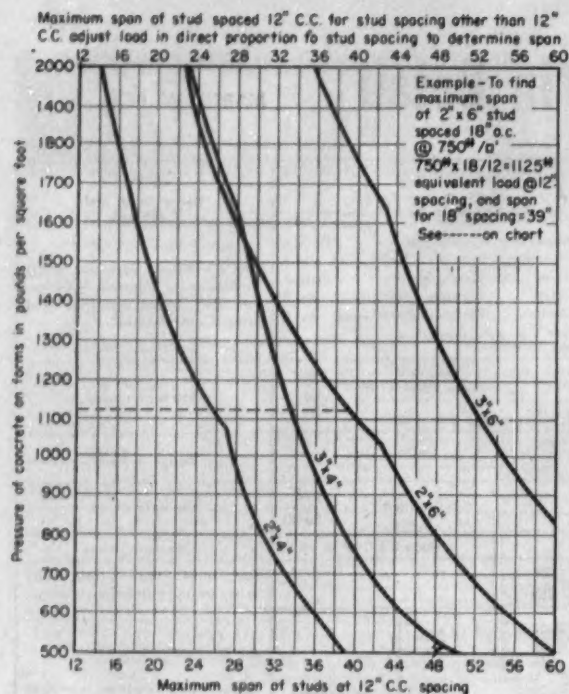


Fig. 12 . . . STUD LOAD with studs figured as D4S for Class I formwork partially continuous in accordance with Figs. 8 and 9. For simple span use span for 80% of actual load.

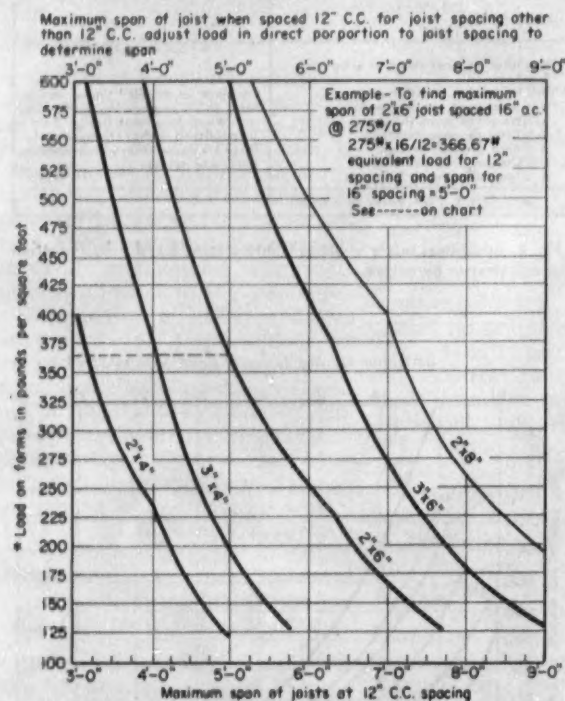


Fig. 14 . . . JOIST LOAD with joists figured as D4S for Class 2 formwork simple span, in accordance with Figs. 8 and 9. Ordinarily, 75 psf is added to weight for forms and live load.

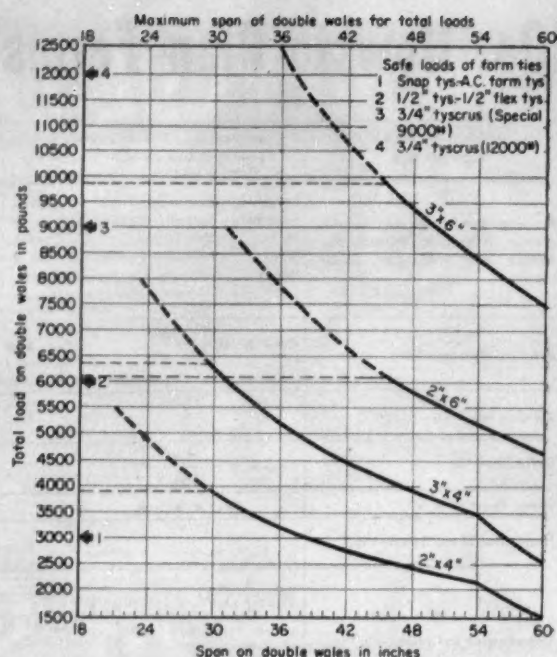


Fig. 13 . . . WALE LOAD with double wales figured D4S for Class I formwork. Loads on double wales are given so that form design can be balanced with tie strength.

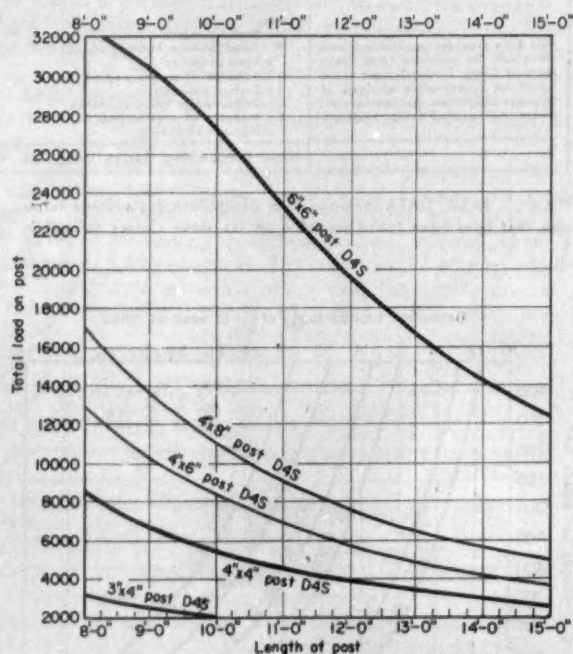


Fig. 15 . . . POST LOAD—posts figured D4S for Class 2 formwork in accordance with Figs. 8 and 9. Usually 75 psf are added to allow for weight of forms and live load.

mon types of form anchors. Form ties shown are in common use for various types of work and are approved for holding the tensile load through the forms. Internal portions of the tie systems invariably

remain in the concrete, and the external portions are entirely or partially salvaged for reuse. A setback of form-tie metal in the cured concrete is accomplished by removal of the tie ends, bolts or

sleeves. Most ties now provide also for spreading the forms when needed, in addition to handling the tensile load requirement.

The three types of anchorage units for formwork shown furnish

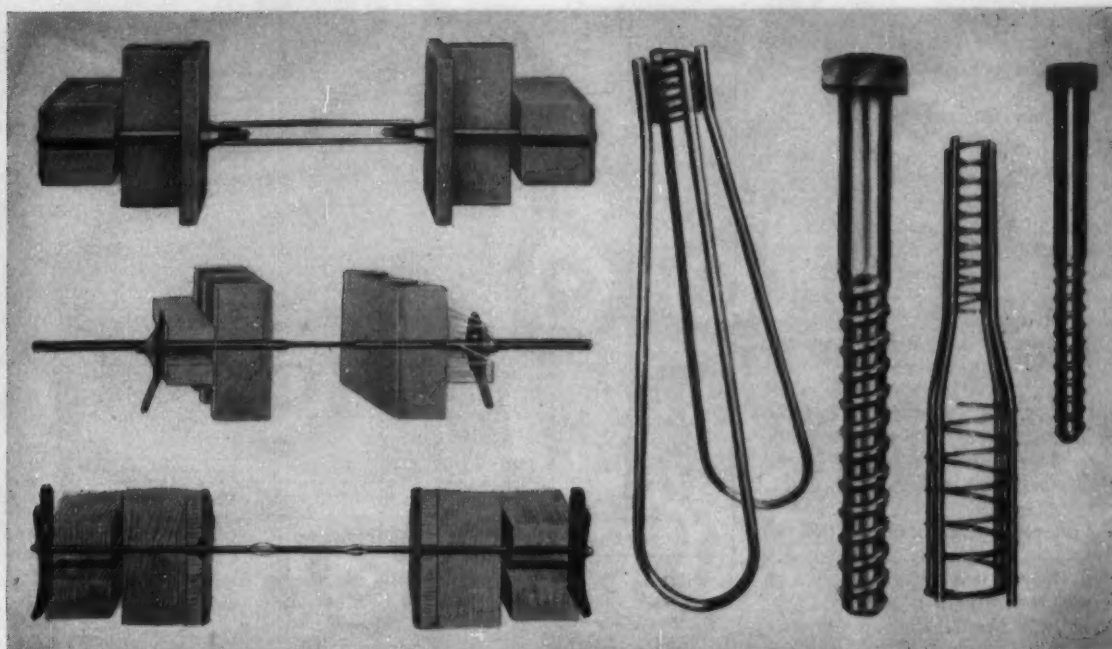


Fig. 16 . . . FORM TIES at left are three types in common use. Top is male bolt system, middle is she-bolt or sleeve-bolt system with fast-action screw plates; bottom is simple snap tie for lighter construction. At right are types of form anchors to be imbedded in concrete and their special self-cleaning bolts. Anchors often become supports for scaffolds.

CONCRETE PRESSURE PER SQ FT	3,000 lb, safe load tie			5,000 lb, safe load tie			9,000 lb, safe load tie			12,000 lb, safe load tie			18,000 lb, safe load tie		
	Horz Max "H"	Vert Max "V"	Stud Spacing Maximum "S"	Horz Max "H"	Vert Max "V"	Stud Spacing Maximum "S"	Horz Max "H"	Vert Max "V"	Stud Spacing Maximum "S"	Horz Max "H"	Vert Max "V"	Stud Spacing Maximum "S"	Horz Max "H"	Vert Max "V"	Stud Spacing Maximum "S"
450	2'8"	2'6"	16" (5/8" Plywood) 19" (1" Sheathing)	USE LIGHTER TIES			USE LIGHTER TIES			USE LIGHTER TIES			USE LIGHTER TIES		
600	2'0"	2'6"	14" (5/8" Plywood) 17" (1" Sheathing)	3'4"	3'0"	14" (5/8" Plywood) 16" (1" Sheathing)									
750	2'0"	2'0"	13" (5/8" Plywood) 16" (1" Sheathing)	2'8"	3'0"	13" (5/8" Plywood) 15" (1" Sheathing)									
900	USE HEAVIER TIES			2'8"	2'6"	12" (5/8" Plywood) 14" (1" Sheathing)	3'0"	3'6"	12" (3/4" Plywood) 12" (1 1/4" Sheathing)	USE HEAVIER TIES			USE HEAVIER TIES		
1050				2'4"	2'6"	13" (3/4" Plywood) (1 1/4" Sheathing)	3'0"	3'0"	12" (3/4" Plywood) 14" (1 1/4" Sheathing)						
1200				2'0"	2'6"	12" (3/4" Plywood) (1 1/4" Sheathing)	2'6"	3'0"	12" (3/4" Plywood) 12" (1 1/4" Sheathing)						
1350				USE HEAVIER TIES			HEAVIER TIES USUALLY USED								
1500															
	Plywood or Sheathing as indicated above Studs 2x4's Wales Double 2x4's			Plywood or Sheathing as indicated above Studs 2x6's Wales Double 2x6's			Plywood or Sheathing as indicated above Studs 2x6's Wales Double 2x6's			Plywood or Sheathing as indicated above Studs 3x6's Wales Double 3x6's			Plywood or Sheathing as indicated above Studs 3x8's Wales Double 3x8's		

NOTE: For heavier ties and higher pressures, steel forms are generally used.

Fig. 17 . . . WALL FORM CHART showing safe working loads for form ties at various pressures. "S" indicates stud spacing for plywood or sheathing; "V" is vertical spacing between wales; and "H" the

horizontal spacing of form ties. Chart is entirely workable and many jobs have been built over a period of years using these time-saving data to design and construct practical forms.

embedded anchorage in previous lifts of a structure for securing additional formwork, brackets and lift forms, as required. All anchorages shown include an embedded anchor and an external fastener which is removed after use, leaving a setback hole for grout patching.

• Safety factors for form-tie units

for Classes 1 and 2 formwork are ordinarily held at 1-1/2 minimum. The safety factor on Class 2 formwork is automatically increased by addition of form and live-load allowances. Safety factor for form ties for Class 3 formwork depends upon the structure and pouring conditions and usually should be maintained at a minimum of 2 to 1.

Safety factor of embedded anchorage units depends upon their service requirement. Anchorages purely for holding forms under normal conditions can be worked at 1-1/2 safety factor, whereas anchorages utilized for supporting scaffolds or massive overhead pours may require a safety factor of 2 or 3 to 1, depending upon how

much live load has been added in designing the formwork and the safety requirements involved.

General Guidance

A wall form chart for general guidance is presented in Fig. 17. This table covers ordinary formwork with size and spacing of sheathing, studs and wales, and capacity and spacing of form ties working together as useful assemblies at various pressure loads.

Experience indicates a tendency toward a relatively square or uniform pattern of tie and wale spacing (Fig. 18) as more acceptable than exaggerated rectangular spacings. The table is developed along practical ideas in this direction.

• **Concrete placement** is tied so closely to formwork and form design that a few comments are in order. It is generally accepted that forms are needed on the top surfaces of sloping slabs and the top of curved arches when the tangent angle is greater than 28 deg from the horizontal. Below 28 deg, screeding ordinarily will suffice and forms are not essential.

In general, high-slump concrete will produce greater pressures than concrete with a low slump. Concrete pressures tend to be greater with rich mixtures than with lean

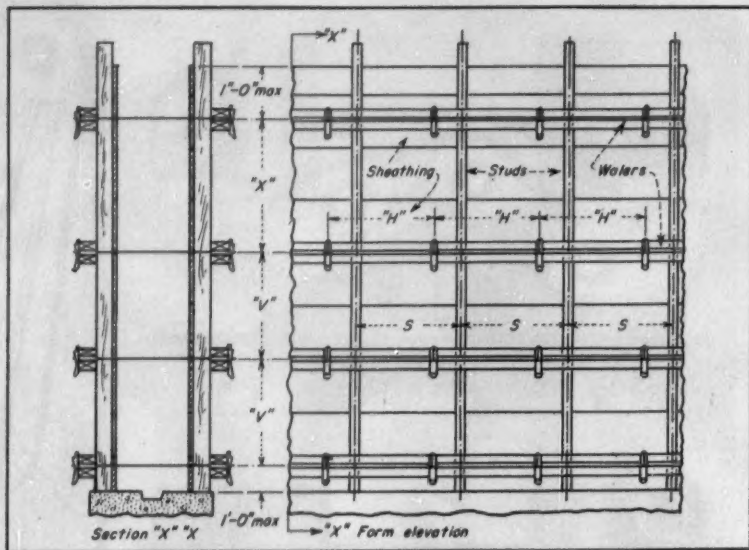


Fig. 18 . . . TYPICAL SPACINGS of ties and framing members for wall forms. Snap ties shown for light forms. Heavier ties must be substituted for 6,000 lb and over.

ones. Crushed-stone aggregates produce less pressure than gravel.

Concrete should always be placed in continuous layers which are spread evenly over the form area so that there will not be more than 2 or 3 ft maximum difference in the height of concrete at any time.

Vibration should be limited to a degree which will consolidate the

concrete in its required position. The accepted method of placing and consolidating concrete is by temporary internal vibration. This vibration should be limited to consolidation of freshly poured concrete and the usual recommendation is that freshly poured concrete should not be vibrated beyond 15 to
(Continued on page 70)

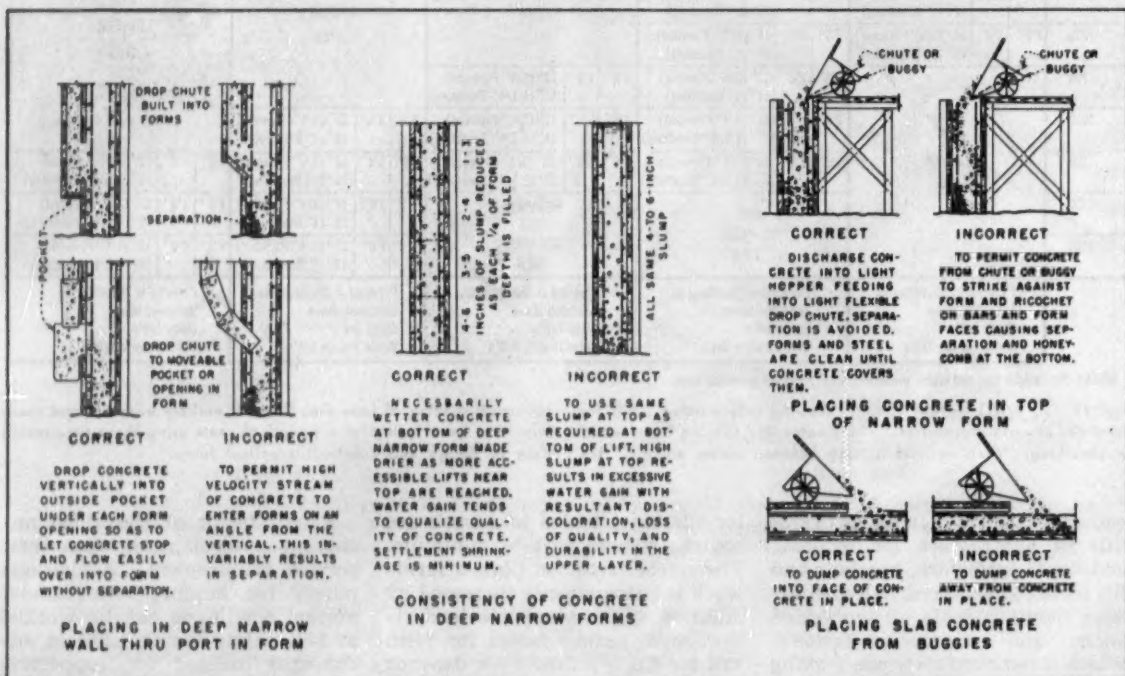
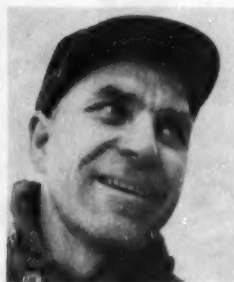


Fig. 19 . . . PROPER PLACEMENT of concrete is tied closely to form design. Correct and incorrect procedures are shown clearly in this composite of sketches prepared for the Concrete Manual of the U.S. Bureau of Reclamation.



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*Hans N. Lee, superintendent,
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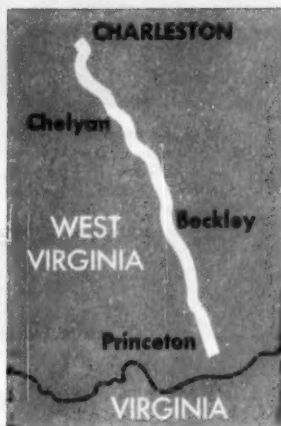
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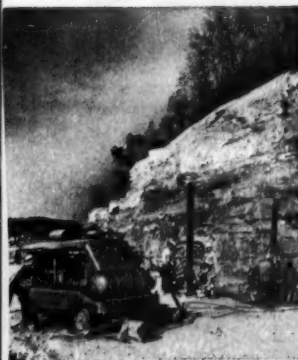
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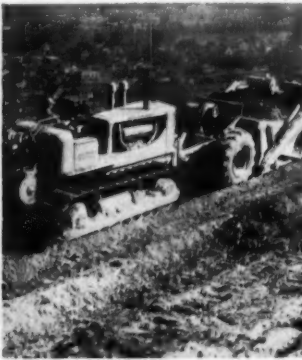
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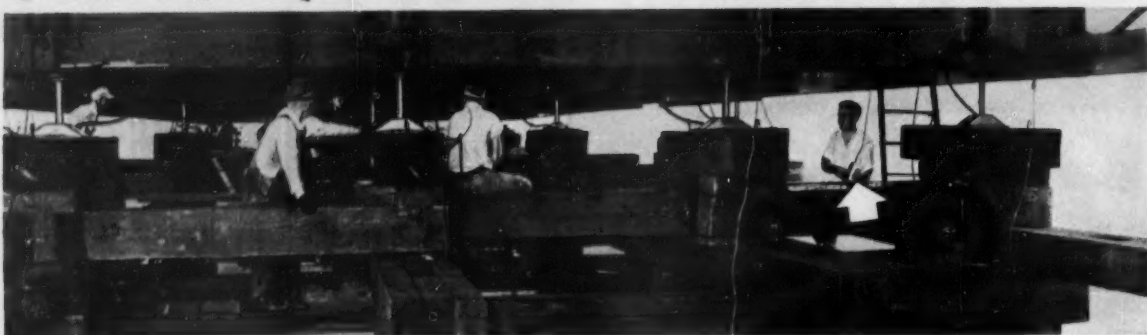
Load and Run—On biggest rock cut, S. J. Groves & Son moved 3 million tons in 300 days with fleet of Euclid trucks. This GM Diesel-powered unit hauls 15 tons per trip—others haul up to 50 tons. Interchangeability of GM Diesel parts simplifies inventory, cuts cost.

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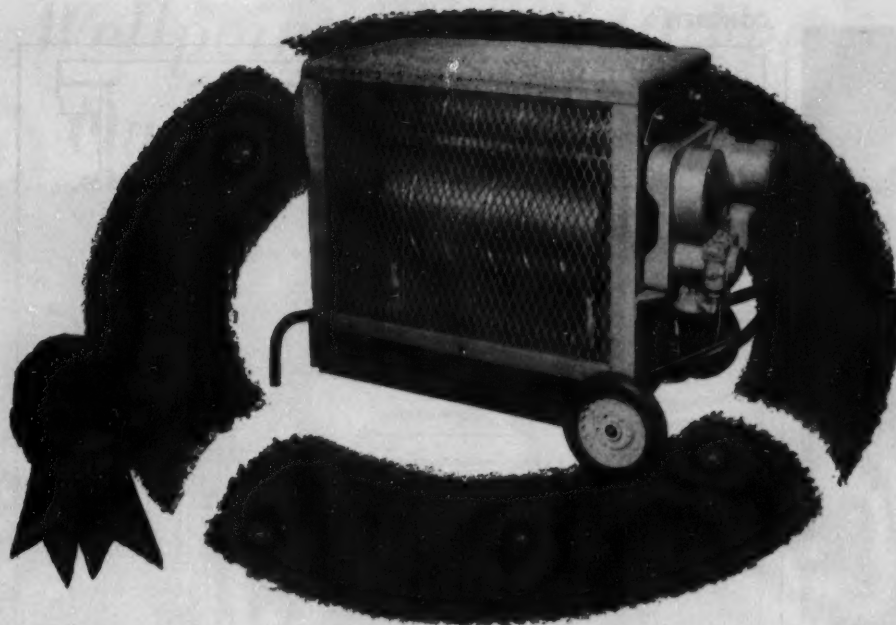
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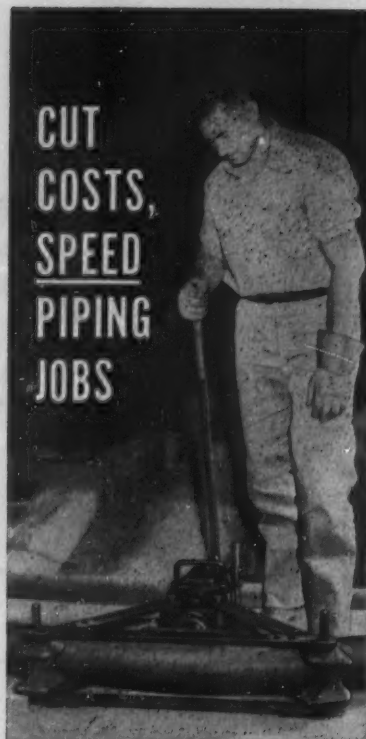
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CONCRETE . . . Continued from page 64

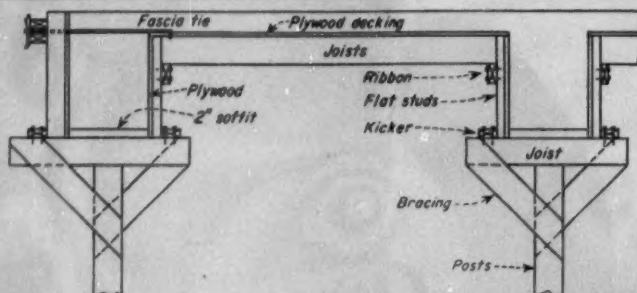


Fig. 20 Typical reinforced concrete beam & slab form

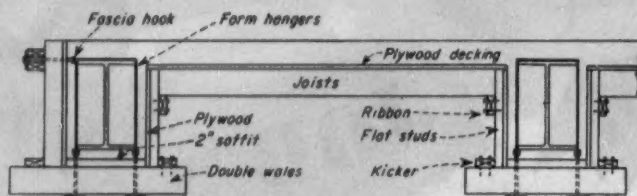


Fig. 21 Typical encased structural steel beam & slab form

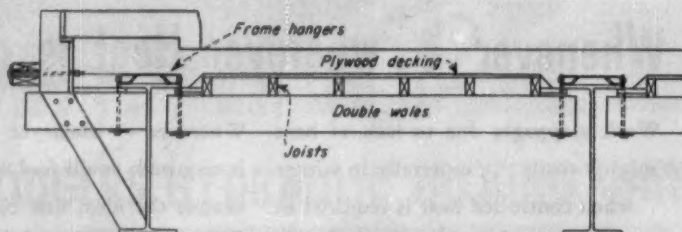


Fig. 22 Typical flat slab haunched structural steel beam & slab form

20 min maximum time after placement.

The top layer of concrete only should be vibrated. Lower layers should not be re-vibrated, with the exception of up to 6 in. of the layer immediately below fresh concrete, to consolidate the two layers. Contact between internal vibrators and tie and anchorage units in the concrete should be avoided. On sloping pours, concrete should be placed and vibrated up the slope which helps to compact the concrete in the lower portions. Fig. 19, taken from the Concrete Manual of the U.S. Bureau of Reclamation, is helpful with respect to placement of concrete.

- **Stripping of forms** should be accomplished with as little difficulty as possible to prevent damage to the concrete and form panels. Stripping formerly was referred to as "wrecking," and this description too often was given literal interpretation when forms were removed. Often salvageable panels or materials were almost nil. With the increased need for panelization and reuse of materials, however,

much greater attention is now paid to the building of forms so that they can be easily removed and reused.

In designing forms, wrecking strips should be provided to facilitate removal from difficult corners. Ties and anchors can be planned for the least difficulty in stripping, to support scaffolding and forms during removal operations and to re-anchor forms conveniently in new positions. All finishing operations required on concrete should be accomplished immediately after removal of the forms.

- **Slab forms in general types** are illustrated in Figs. 20, 21 and 22, covering typical reinforced concrete beam and slab forms which must be supported by posting. Also there are two representative types of concrete slab forms suspended from encased and non-encased structural steel. These are the most typical of numerous conditions in this category.

The twelfth article in this series will appear in the December issue.

Wellpoints Wring 10 Feet of Water Out of **POWDER-FINE SAND**



Contractor: Gabes Construction Co., Sheboygan, Wisconsin

Excavating a 15' trench in very fine, water-bearing sand and silt with hard blue clay at subgrade can be quite a problem. So much so that the first attempt to build a storm sewer in this particular area of Sheboygan, Wisconsin, was abandoned.

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CANAL LINERS . . . Continued from page 59

the center line and berm provide grade control on both the liner and trimmer.

The liner is powered by a 100-hp Cummins 90-kw diesel electric set and uses the same type electric drive as the trimmer.

Concrete for the liner is dropped into the hopper by a Northwest 80-D dragline equipped with a Baer bucket. The hopper releases the material into the pan where it is retained by a series of baffles. To help assure uniform distribu-

tion of concrete along the pan, the hopper can be moved up and down.

The slip form has a screed and vibrators similar to conventional equipment. Concrete finishers work from a platform attached to the rear of the liner.

Air rams powered by an electric compressor operate a grooving plate behind the pan to put dummy joints in the lining at desired intervals.

The liner placed an average of 333 cu ft per shift on the Chandler

job. It used about .33 cu yd per ft of lining for a canal section with a 24.2 slope length and .31 cu yd per ft of lining on a 22.4-ft slope length section.

Lehigh Type 2 low-alkali cement was used for the concrete lining, which was not reinforced. Mixing was handled by a Model 34E Rex 1½-cu yd paver.

At the completion of the job, the machines were disassembled, placed on a 20-ton trailer, and trucked away.

Good Equipment Ideas Reduce Project Time

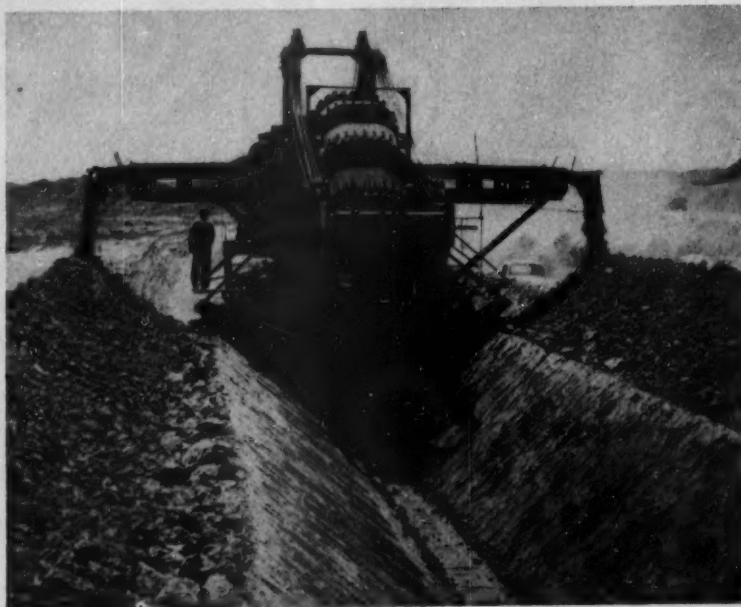
MORRISON - KNUDSEN COMPANY, INC., used several ingenious devices on excavating and lining 26 mi of irrigation canals and laterals in Arizona on a \$2,000,000 project for the Bureau of Reclamation, and with their help was able to finish the 16-month project in one year.

Much of the contract was accomplished with conventional equipment, but 2-ft laterals presented a problem until Project Manager James R. Ricker and his assistants got busy. They came up with the answer to the tough task of digging and trimming the narrow-bottom ditch to proper grade and contour by converting a standard, wheel-type Buckeye trenching machine.

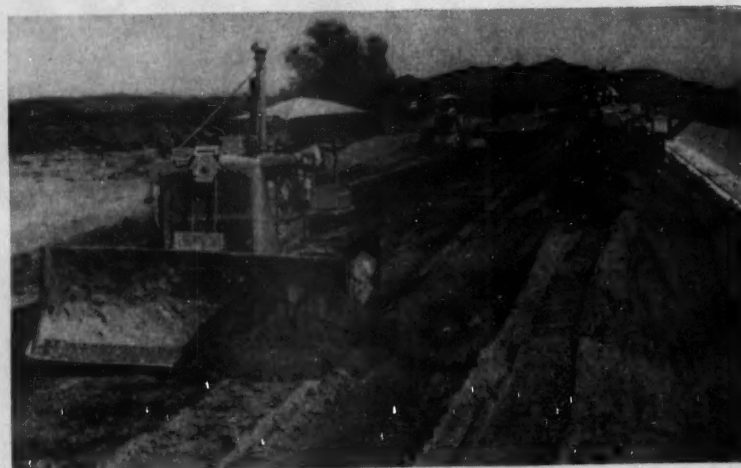
They asked the manufacturer to add prism-shaped, side-cutting wings, enabling them to dig and trim the sloping walls of the laterals in one continuous movement. The trencher wheel dug out the bottom. As evidence of this machine's worth, a Bureau of Reclamation official called the improvised three-way excavator, "the best piece of equipment developed to date."

Another piece of equipment fashioned to raise the canal core bank to finished height, was a wing blade mounted on a tractor. This device pushed earth to the top of the embankment. Another bulldozer followed behind to smooth out the top of the bank.

A new and faster method of sealing concrete pipe joints against leakage was also worked out by MK builders on this project. They developed a canvas band, or sleeve, that first was wrapped around the joint and fastened in place. Concrete then was poured between the band and the pipe. Once the concrete had set, the canvas was removed.



BUCKEYE TRENCHING MACHINE was converted to a canal excavator by adding prism-shaped side cutting wings. It digs and trims in a single operation.



WING BLADE mounted on a Cat D8 tractor pushes earth to the top of the embankment. Another bulldozer working on top of the bank smooths out the wing-bladed material.



This 5 yard Manitowoc shovel is amply protected at all wear points with Stooddy 21.

STOODY 21 helps maintain schedule on Nevada's Highway 40

Stooddy 21 has played a part in meeting earth-moving schedules for Morrison-Knudsen, world's largest construction company, on a 2½ million dollar grading job, expanding Nevada's Highway 40 between Reno and Fernley. Contracting to do the job in 170 days, M-K has kept well ahead of schedule.

Equipment used by this division of M-K is customarily hard-faced before it goes into service. On the Nevada

highway job this protection was doubly important because of the abrasive nature of the material handled. As routine procedure new shovel teeth, adapters,



All exposed areas of this shovel tooth adapter are hard-faced with Stooddy 21.

buckets and ripper teeth were hard-faced with Stooddy 21 and maintained with this alloy throughout. Worn teeth were built up by welding a section of grader blade to the point, using low hydrogen electrodes. These teeth were then hard-faced as illustrated. No pre-

heat or heat treatment was used, nor was any effort made to follow a particular hard-facing pattern—the object was simply to get on enough hard metal to do the job.

Because of Stooddy 21's resistance to both abrasive wear and impact, average shovel tooth life on this job was extended to two full shifts before rebuilding or refacing became necessary.

Stooddy's hard-facing experience in protecting equipment over the past quarter century is yours for the asking. See your Stooddy dealer (consult the yellow pages of your phone directory) and request a free copy of the "Hard-Facing Guidebook," or write direct.



Worn teeth built up with grader blade scraps and hard-faced with Stooddy 21.

STOODY COMPANY

11972 E. Nauson Avenue,
Whittier, California



Wide sweep of trees and brush clears area with one pass in . . .

Balanced Land-Clearing Operations

EFFICIENT WORK UNITS are the key to successful land clearing operations, according to Construction Engineering Co. of America Inc. (CECOA), of Danbury, Conn. Manpower and equipment must be in balance for each specific phase, and production depends upon certain basic power units, such as crawler tractors, but not necessarily the biggest and most powerful obtainable.

This is the basic planning and operating concept of two land clearing specialists, G. T. Erickson, president, and W. H. McPheters, chief engineer of CECOA. Their methods have paid off in clearing

for a hydroelectric storage reservoir in Connecticut.

Connecticut Light & Power Co. is constructing Shepaug Dam and a hydroelectric plant on the Housatonic River near Sandy Hook. The lake that will form in the storage basin will have an area of 1,870 acres and a 35-mi shoreline. The 40-mi clearing line is at EL 210—about 10 ft above lake level.

Water will back up approximately 10 mi on the Housatonic and 4 mi up a tributary, the Shepaug River. In addition, the long, narrow lake will extend into 15 major brooks with a total length of about 7 mi and some 73 sloughs. Walls of

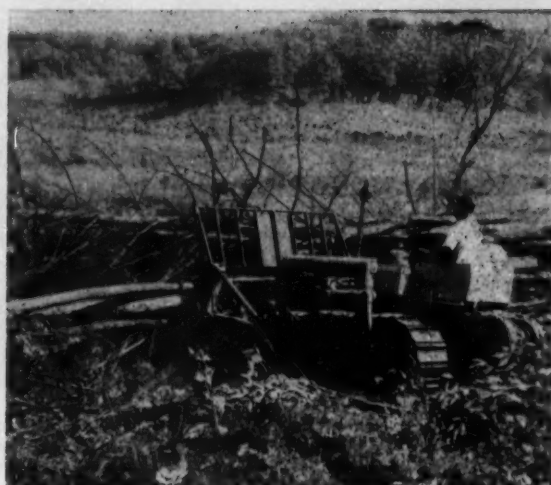
the reservoir generally are steep and rocky, ranging from 10 to 50% slope. In some places they are sheer rock cliffs.

Most of the land is populated heavily with boulders ranging in size from 3 to 20 ft in dia. There was considerable acreage where swampy conditions existed and, as soon as the trees were cut, the hill-sides turned into quagmires, as the tractors broke through the surface and released hundreds of springs that had previously been supplying moisture for the trees.

It was necessary to construct miles of access roads. These were put through front yards, barn



D4 WINCHES HEAVY TREE down rocky slope, dragging smaller trees and brush along, as they accumulate in its path. These smaller crawler-tractors work out well as sure-footed "tree collectors".



ON THE LEVEL, and elsewhere as possible, the D4s get behind their loads of parallel trees and push them into bigger piles for burning. Note extra brush guard on top of Fleco rake.



A BIG TREE IS UNDERCUT at several places, as this experienced woodsman makes a quick job of toppling it with a Homelite chain saw.



SPREADING GIANT which grew unhampered in open territory is dragged away with a D7 crawler to be decked and burned. Initial thought was to salvage most of the bigger timber, make some extra money, but operation became too costly. Opposite slope is cleared.

yards, abandoned logging trails and many other places. As each access road tapped into the clearing line, it was extended for miles up and down stream by gouging out a trail so that equipment, supplies and men could be brought to work areas.

Trees were cut down with Homelite chain saws. Stumps were cut close to the ground and with the contour of the slope between the EL 210 contour and the EL 170 contour. This stumping was done with 2-man Disston chain saws. Below this elevation the stumps were cut at a maximum height of about 18 in. As soon as the trees were felled, they were pushed into piles for burning with Caterpillar tractors equipped with Fleco root rakes.

After experimentation, a for-

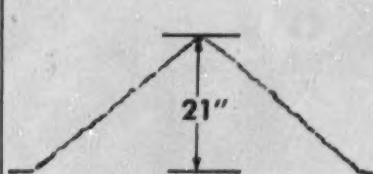
(Continued on page 79)



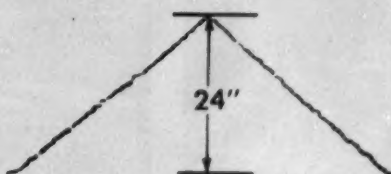
DECKING IS NEXT. After big trees have been dragged to a pile for firing, the Cat D7 gets under it broadside with its built-up Fleco rake and rolls the tree on to the pile.

QUESTION*

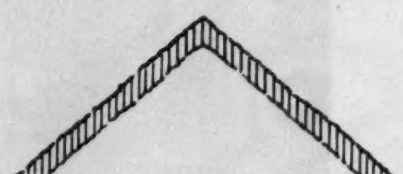
**How much more material is there in a
Three-Inch-Higher Windrow . . . 9% . . . 18% . . . 31% . . . ?**



Cross section of an average, 21-inch high windrow . . . the area (width x height \div 2) is 614 sq in.



Now increase the height of the windrow by 3 in. The cross-section area now equals 804 sq in.



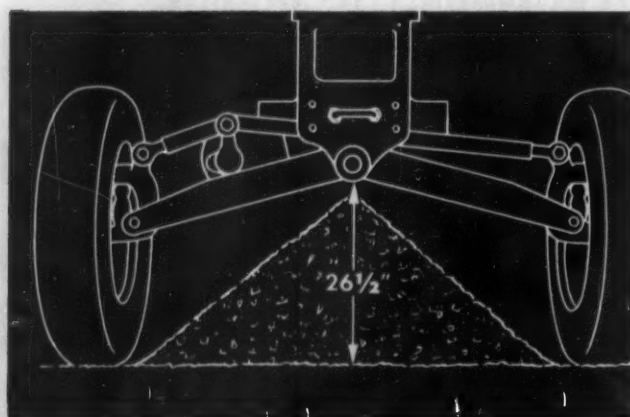
The difference . . . 190 sq in, over 30 percent more area, which means over 30 percent more yardage.

***Only a Combination of Advanced Design Features Lets a Motor Grader Handle Big Loads Fast**

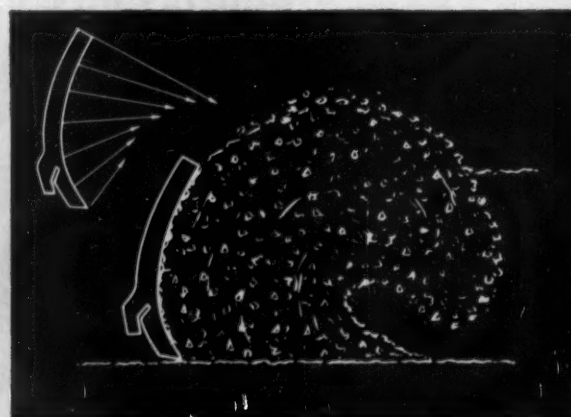
To take full advantage of even a *three-inch* difference in windrow height (as explained above) a heavy-duty motor grader needs new design and performance characteristics from front to rear . . . and from the top of the main frame to the bottom of the blade. No single

feature can give you the increased work capacity that is so essential on road construction, maintenance and oil-mix jobs.

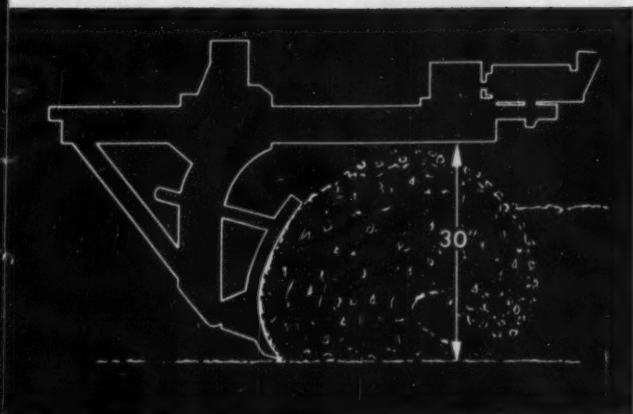
Now let's analyze the Allis-Chalmers 104-brake-horsepower AD-40 to see how it measures up to these stiff requirements.



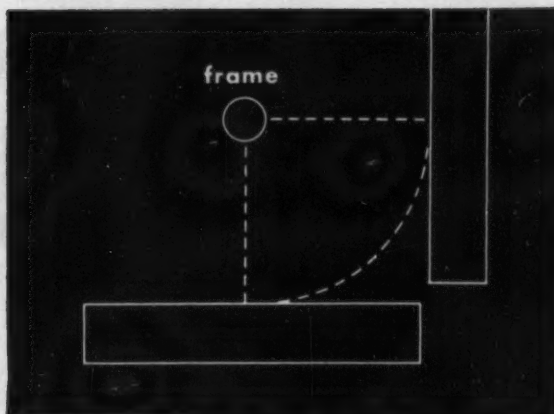
1 A high-arch front axle to straddle big windrows . . . take advantage of that 3-inch difference and let big loads pass through to the blade.



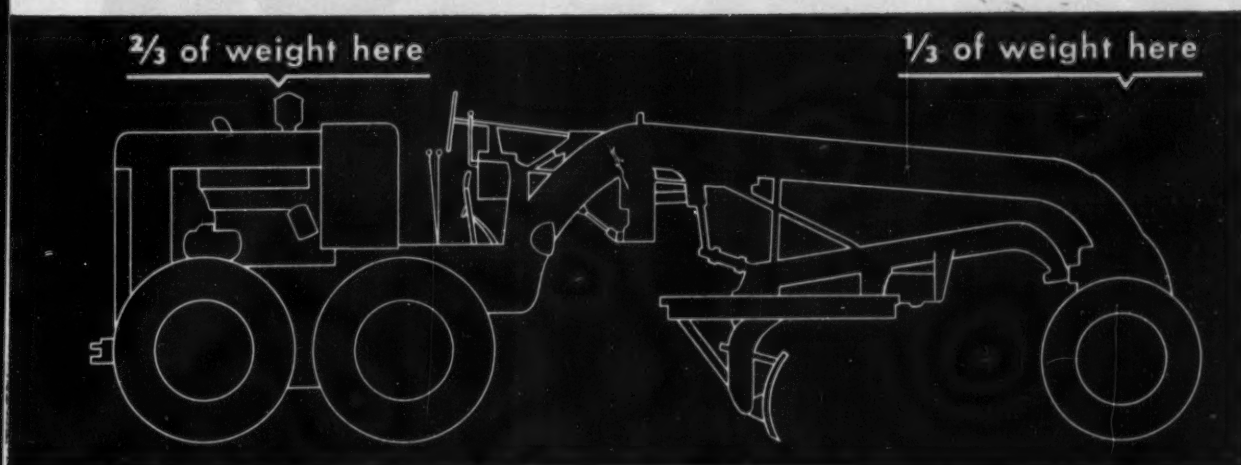
2 A rolling-action moldboard . . . to insure a "live" load that rolls freely off the blade . . . moves the load faster and takes full advantage of engine power.



- 3 Ample throat clearance . . .** to handle 30 percent bigger loads without disturbing free, rolling action . . . and without jamming dirt, oil-mix or any other material against the circle.

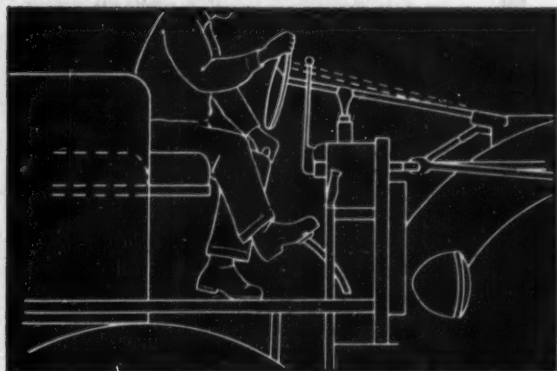


- 4 Full blade freedom . . .** the exclusive tubular frame and a long tubular drawbar insure full blading effectiveness on the road, in the ditch or on the slope.



- 5 Blading accuracy is essential.** A long wheel base, the tubular frame . . . and lift-cases located directly over the circle, provide smooth, accurate finishing.

- 6 Balanced power, weight and traction . . .** a heavy-duty engine and two-thirds of the weight concentrated on tandem-drive rear wheels provide the best in traction, positive blade pressure and steer-ability.



- 7 Easy control and visibility —** A big platform with plenty of leg room . . . adjustable seat and steering wheel . . . power steering will assure working ease. Single member frame, low control board and tapered platform corners provide "pilot-house" visibility.

This design, that combines working advantages every owner needs and wants, exists in only one motor grader . . . the Allis-Chalmers AD-40. *That's a fact . . .* a fact your Allis-Chalmers dealer will be glad to prove to you. Ask him to show you how the AD-40 gives you the *differences* that mean more work done . . . by a demonstration under on-the-job conditions.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

AD-40 Motor Grader
104 brake hp • Weight — 23,000 lb



NEW CHEVROLET TRUCKS

have what it takes to boost efficiency and bring down costs!

In the next three paragraphs you'll find a few good reasons why you can get more work out of a Chevrolet truck and save money doing it.

INCREASED POWER IS THE FIRST BIG REASON

With Chevrolet's higher compression ratio you've got more power under the hood. Power that results in greater acceleration and hill-climbing ability. Faster starts and acceleration over the day's work save valuable time and increase over-all efficiency. Check the gas mileage, too. With this higher compression ratio, your Chevrolet truck registers *more miles on the job* for each tankful of gas. That's where you start to save money.

BUILT-IN RUGGEDNESS SAVES EVEN MORE

The strength and stamina of more rigid frames, and the special chassis features that pertain to each model—these combine to add extra ruggedness to your Chevrolet truck. Push it hard on the rough jobs; keep it going over long schedules—you'll still find your upkeep costs lower and your Chevrolet trucks lasting a lot longer.

ONE LAST POINT—and maybe the most important to you—you'll find Chevrolet's line of trucks priced the lowest of all! Talk over your needs with your Chevrolet dealer. He'll be glad to give you the facts about the best model for your job. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**MOST TRUSTWORTHY TRUCKS
ON ANY JOB!**



CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

THREE GREAT ENGINES—The new "Jobmaster 261" engine* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **NEW TRUCK HYDRA-MATIC TRANSMISSION***—offered on 1/2-, 3/4- and 1-ton models. Heavy-Duty **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **DIAPHRAGM SPRING CLUTCH**—improved-action engagement. **HYPOID REAR AXLE**—for longer life on all models. **TORQUE-ACTION BRAKES**—on all wheels on light- and medium-duty models. **TWIN-ACTION REAR WHEEL BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—greater holding ability on heavy-duty models. **NEW RIDE CONTROL SEAT***—eliminates back-rubbing. **NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give increased load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, handsome appearance.

*Optional at extra cost. Ride Control Seat is available on all cabs of 1 1/2- and 2-ton models, standard cabs only in other models. 3/4-Jobmaster 261" engine available on 2-ton models, truck Hydra-Matic transmission on 1/2-, 3/4- and 1-ton models.

BALANCED LAND-CLEARING

Continued from page 75

ward-tilting brush guard was developed which improved the performance of the rake. This guard enabled the tractor operator to push larger loads and to roll material into tighter piles. The rolling action caused by the tilting of the guard almost doubled production. This guard was made of heavy steel bars with a radiator guard plate and was fabricated in CECO's shop, then welded to the top of the Fleco rake.

Whole trees were lined up side by side, like matches in a box, and then shoved squarely from the sides with Caterpillar D7 tractors until they were packed tightly in large piles. Piles were then fired. As the piles burned down, dozers kept them packed by shoving burning logs and brush together. This continuous packing caused the fires to burn both hotter and faster and to reduce everything to ashes. Wherever the land was flat and not covered with boulders, as much as 3 acres of timber and brush were pushed into giant piles.

The tractors used these trees as large brooms and swept the land clean so that the hand labor generally used for "picking up" was practically eliminated. Where this was not possible, because of adverse terrain, trees were hooked with cables attached to Hyster winches mounted on the rear of the Caterpillar tractors and were winched to places where large piles could be made for burning.

Shove Downhill

The Hyster winches on the Caterpillar D4s also were used to assist the tractors on steep hill-sides. The cable was anchored at the top of the hill and the tractor backed up the slope, aided by the winch. The crawler gathered up a load of trees in front of the rake, pushed them into piles and then shoved piles down the hill. This process was repeated many times until large piles were made.

A John Deere Model 40 crawler tractor, equipped with a blade and winch, was used in places where larger tractors could not be used. It was also used for final clean-up in each area, as a tow tractor for a small trailer or sled to haul accumulated debris from the river and the charred wood from the fires that did not burn completely. Where neither of these methods was possible, trees were felled with chain saws, cut into pieces small



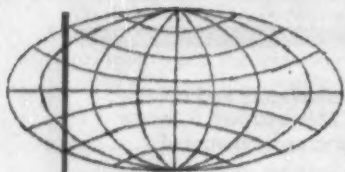
INSLEY TYPE K WITH CLAMSHELL ATTACHMENT

The Insley Line includes excavators and cranes,
5 to 30 ton capacity—rubber or crawler mounted
—gasoline, diesel or electric power. For full
information on the Insley Line write the Insley
Manufacturing Corporation, Indianapolis 6, Indiana.

INSLEY MANUFACTURING CORPORATION, INDIANAPOLIS

wholly owned subsidiary

THE MAXI CORPORATION • LOS ANGELES



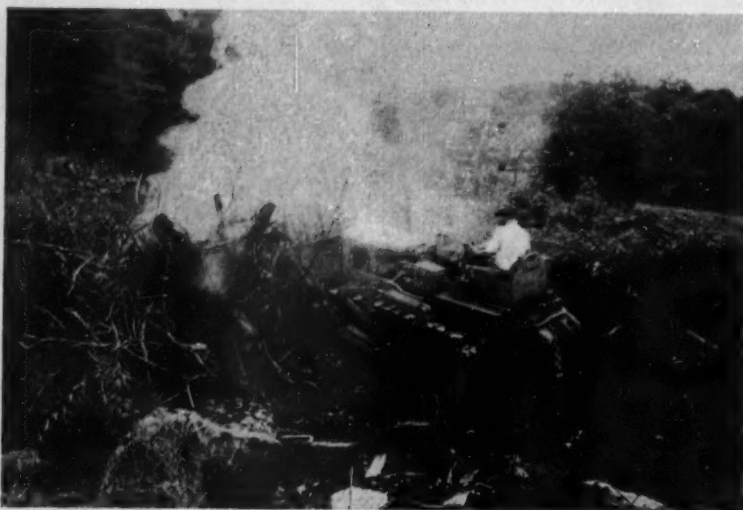
*Sold and
Serviced
throughout
the World!*

MARLOW PUMPS • RIDGEWOOD, NEW JERSEY
Div. of Bell & Gossett Company

BALANCED LAND-CLEARING . . . Continued



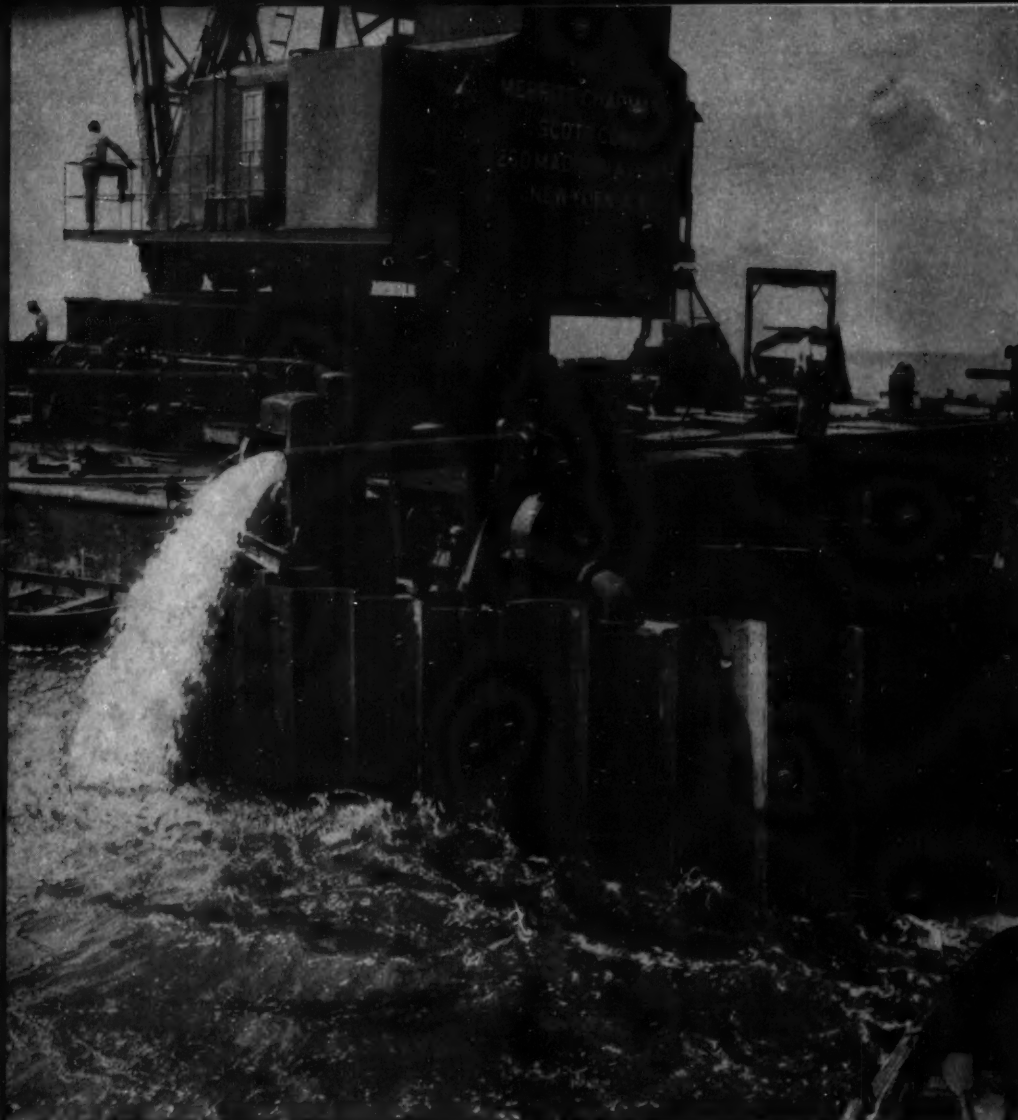
UNIFORM STAND OF straight trees has been toppled neatly down hill in parallel lines like so many match sticks. But large boulders on steep slope make clean-up a rough job.



RAKING OVER THE AREA, D4 brings up a mass of brush and loose stumps to a burn site. Swampy areas give clearing crews almost as much trouble as do the large boulders.



PILES ARE STACKED HIGH and kept packed when burning to get hotter fires and convert every possible item to ashes. Extra guards on top of root rakes aid this maneuver.

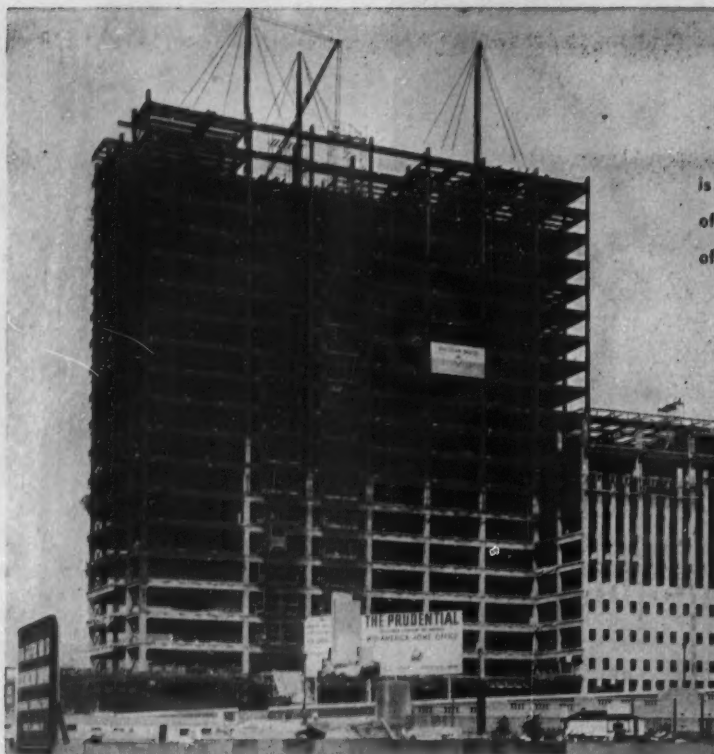


PIERS FOR THE THREE MILE BRIDGE over the Hudson River on the New York State Thruway between Nyack and Tarrytown created no problem for Merritt-Chapman & Scott Corporation of New York City. Of a total of 23 piers, 15 were built with cofferdams, two for each pier. Dependable, 8" AGC rated Marlow Self-Priming Centrifugal Contractor's Pumps were used on the job to dewater the cofferdams quickly and handle seepage water efficiently.

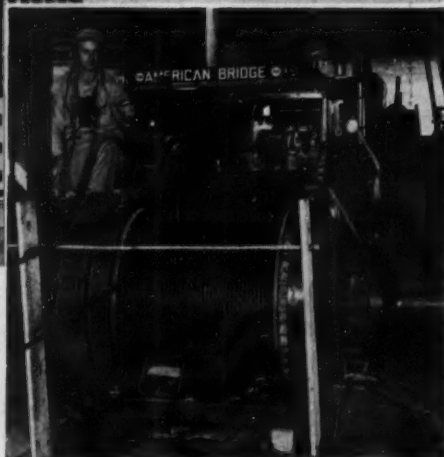
marlows are dependable!

Construction bids must be *right* to get the job and make a profit! Progressive operators use new methods and modern equipment to reduce costs. When it comes to pumping jobs, more and more contractors know they can depend on rugged, efficient Marlow Self-Priming Pumps or famous Marlow "Mud Hogs" to get the job done *on time* with little attention and low maintenance. See your Marlow dealer or write for Bulletin C-52.

MARLOW PUMPS • RIDGEWOOD, NEW JERSEY



Presently under construction in Chicago is this forty-two story mid-America home office of the Prudential Insurance Company of America.



Three **CLYDE** hoists set steel on this forty-two story Chicago project

There's a lot the illustrations do not show about this construction project

Only one of three Clyde Steel Erector's Hoists on the job is pictured. We would like to be able to boast that a dozen Clyde Hoists worked on this job, but it takes only three to keep up to schedules . . . to keep materials flowing smoothly, that's the extra value you'll find in Clyde.

Time is big money on a project of this proportion. Any down time throws a monkey wrench into schedules and costs! Ease of maintenance . . . minimum maintenance . . . may have been a deciding factor in the contractor's choice of Clyde Hoists. Or perhaps the all-steel bed and side frames that provide the necessary ruggedness without excessive weight. The selection could have been based on the large diameter brakes and internal expanding band friction

clutches that engage and release smooth and positive for perfect load control. Anti-friction bearings throughout and the ease of chain adjustment without removing chain guard are more features owners and operators like in Clyde Hoists!

It takes a lot of features to add up to a superior quality, work-hungry hoist . . . one that will smoothly and swiftly spot loads with safety, without operator fatigue and without downtime! All these and many other outstanding and exclusive features of Clyde Hoists are the result of the 55 years of engineering and manufacturing know-how that goes in to every Clyde.

Before considering the purchase of any hoisting equipment, write for complete information about a "Quality-Plus" Clyde Hoist. Get all the facts and you'll get a Clyde.

HOISTS—DERRICKS—WHIRLEYS—BUILDERS TOWERS—CAR PULLERS—HANDI-CRANES—ROLLERS



CLYDE IRON WORKS, INC.

Established in 1899

DULUTH 1, MINNESOTA





HOUSE MOVING is routine operation for Cat D7 with its Flecó rake lifted high. Balanced work patterns reserve big tractors for heavy work, use smaller equipment where it works best.



BRUSH CUTTING is important work. Power-driven Brushmasters save a lot of manpower, cut light brush ahead of timber so that dragging trees sweep it along to fires like a big broom.

enough to be handled by men, then piled up and burned.

Smaller trees, vines and brush were cut with Brushmaster power scythes which proved to be effective tools for this work. This lighter material had to be cut off at ground level in order to get rid of it, as the heavier equipment only bent it over instead of cutting it.

A test was made early on the job, and it was found that one man using a Brushmaster cleared the same ground that 5 men could clear with axes or brush hooks.

Manpower and equipment were organized in balanced teams. Caterpillar D4s formed the nucleus around which the operation functioned. The rest of the equipment,

such as larger tractors, chain saws, brush cutters, axes, were balanced to form an efficient work unit. With each crew, Willys Jeeps and a 4x4 International truck were used to carry supplies within the work areas and were also used to haul miscellaneous debris to the fires. Both GMC and Chevrolet pickups were used to haul supplies



TRANSCRETE

TRUCK MIXERS

**Puts More
Payload on
the Road —
More Concrete
in the Forms
MAKES
MONEY
FASTER!**



LOW COST — RUGGED — LIGHTWEIGHT

- Thoro-mix action. Mixes and discharges all shrimps.
- Simplest of all. No maintenance or service problems.
- Now available as 3½ - 4½ - 5½ yard mixer.
- Bureau rated and job tested.

**3½ - 4½ - 5½
YARD MODELS**

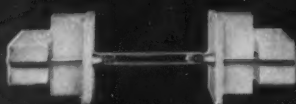
**WITH PERMISSIBLE ½ YARD
ADDED RATING**

CONSTRUCTION MACHINERY COMPANY, Waterloo, Iowa

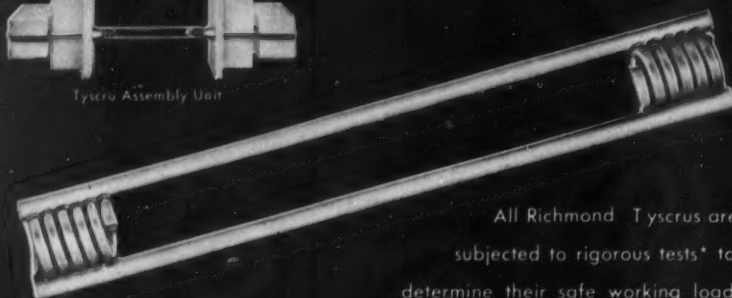
Be Sure Your TYSCRUS Are

Strength Rated

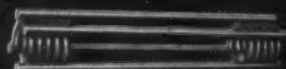
by **Richmond**



Tyssru Assembly Unit



Tyssru 4 Strut



Adjustable Tyssru

All Richmond Tyssrus are subjected to rigorous tests* to determine their safe working load and ultimate strength. These ratings are listed in our catalogue. Complete test reports are available on request.

Richmond also saves you money! The working parts—Tyllags, Tycones and Flat Washers—are returnable for credit. You pay no rental charges!

Tyssru Size	Published Safe Load	Report of Ultimate Load	
		Test No. 1	Test No. 2
1/2" Dia.	6,000	9,490 lbs.	10,590 lbs.
3/4" Dia. (12M)**	12,000	19,720 lbs.	20,570 lbs.
1" Dia. 2" Strut	18,000	27,580 lbs.	27,820 lbs.
1" Dia. 4" Strut	24,000	37,930 lbs.	36,890 lbs.
1 1/2" Dia. 4" Strut	30,000	55,270 lbs.	56,790 lbs.

*Conducted at Brooklyn Polytechnic Institute by Charles E. Schaffner, Asst. Professor of Civil Engineering.

**Production items are regularly check tested in our own plant with our modern Riehle hydraulic testing machine.

1 1/2" Dia. 9M Tyssrus also available for Safe Load of 9,000 lbs. Ultimate Strength 16,000 lbs.

**INSIST ON RICHMOND
... AND BE SURE IT'S RICHMOND!**

Richmond
SCREW ANCHOR CO., INC.

816-838 LIBERTY AVENUE • BROOKLYN 8, N.Y.
315 SOUTH FOURTH ST. • ST. JOSEPH, MO.

Send for new
1954 Catalogue

BALANCED LAND-CLEARING . . .

Continued

to the job site and to go to various out-of-town points for parts when emergencies occurred.

As the road mileage for heavy haulage around the project was approximately 75 mi, an LJT Mack tractor with a Martin trailer was used to transport the tractors between various work areas or into the home repair shop in Danbury. A portable shop, built on a Ford truck chassis, was used for storage of spare equipment and the field repairs. A 400-amp Lincoln welder mounted on a Ford truck chassis was used both on the job and at the shop for repair work.

In certain areas where it was impractical to burn the heavy wood, an International Model TD-14 tractor equipped with a Hughes Keenan swing crane was used to pick up the logs and load them on trucks that hauled them to local sawmills.

No Salvage

Timber on the site was estimated at approximately 4,000 M fbm, and a large profit from salvage was envisioned at first. However, a careful study of the area proved that the good trees were either too scattered or were in inaccessible places. It was decided not to try to salvage the timber, as the cost of using production-type labor was in excess of the market value of the logs. In certain areas logs were sold to local buyers, and in some instances were given to farmers for the hauling. Approximately 10,000 cords of wood were hauled out of the basin by local residents as a result of advertising free fire wood. While this method of disposal was not the preferred one, it was necessary, as drought at one time made burning too hazardous, and no permits to burn were being issued.

The choice was either to shut down the job and let the men go or to find another solution. It was decided to go ahead with the cutting of trees in places where roads existed so that logs and cordwood could be hauled away. The remaining brush and trimmings were piled, then burned when the fire hazard subsided.

The Housatonic River presented a major problem, as the water level varied as much as 3 to 4 ft each day due to hydro operations upstream. This constant and unpredictable variation made river clean-up an expensive operation,

TRADE-IN OFFER EXTENDED!

on 2 new super duty SKIL Saws!

Complete Sell-Out requires extension
of this Trade-In Offer thru December 15th ...
for the benefit of builders who missed it!

Trade in your
old saw for
\$22.50!

Your old portable electric saw is worth \$22.50 to you—regardless of its age, make or condition! Here's your chance to own the newest and finest in high-speed, high-power SKIL Saw equipment—through the greatest deal ever!

Offer extended through December 15th! See your SKIL distributor or mail coupon.

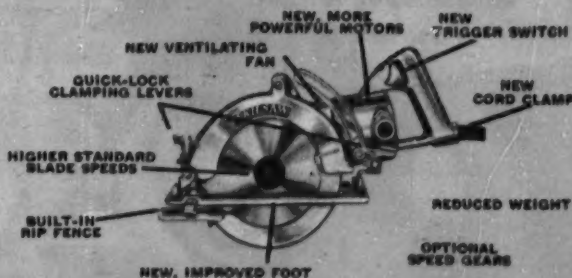
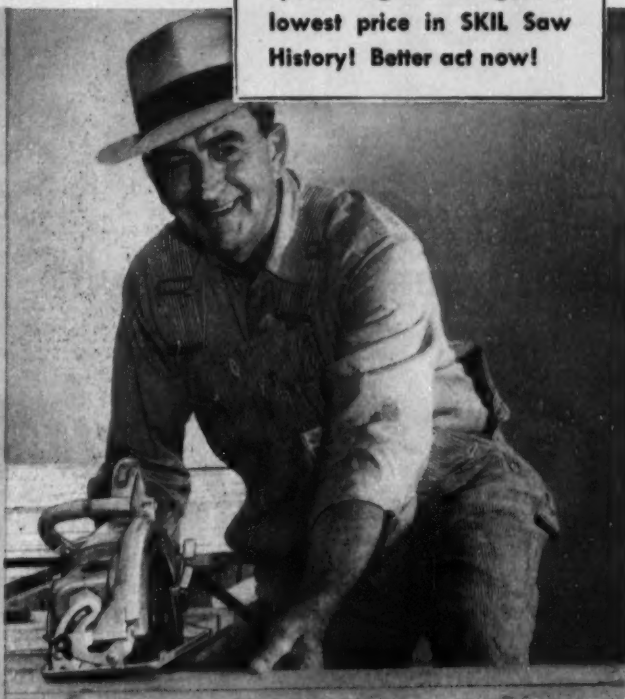
NEW SKIL SAW 77 (7¼" Blade)—Speed increased 40% to 4500 r.p.m. and weight cut to 15¼ lbs. Power output boosted 100%. Depth of cut 2½ inches—Bevel cuts 2" dressed lumber at 45°. Most popular SKIL Saw for all-round carpentry—the standard for general construction. Power to cut wet lumber or tough materials such as metal, stone, compositions.

Price, New Model 77 less case \$112.50
Trade-in credit 22.50
YOUR COST, ONLY \$ 90.00

NEW SKIL SAW 825 (8¼" Blade)—Speed boosted 34% to 4000 r.p.m. and weight reduced to 17¼ lbs. Power output increased 107%. Depth of cut 2½ inches. Bevel cuts 2" rough lumber at 45°. A powerful, heavy-duty saw, ideal for use on either residential or commercial construction. Powered to easily cut 2" rough lumber—wet or dry—as well as many other tough and resistant materials.

Price, New Model 825 less case \$134.00
Trade-in credit 22.50
YOUR COST, ONLY \$111.50

Up to 107% greater power!
... up to 40% higher blade
speed! Lightest weight ...
lowest price in SKIL Saw
History! Better act now!



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PORTABLE TOOLS

Made only by SKIL Corporation,
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5033 Elston Avenue, Chicago 30, Illinois
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**FREE!
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NOW!**

SKIL Corporation, Dept. CME-114
5033 Elston Ave., Chicago 30, Ill.

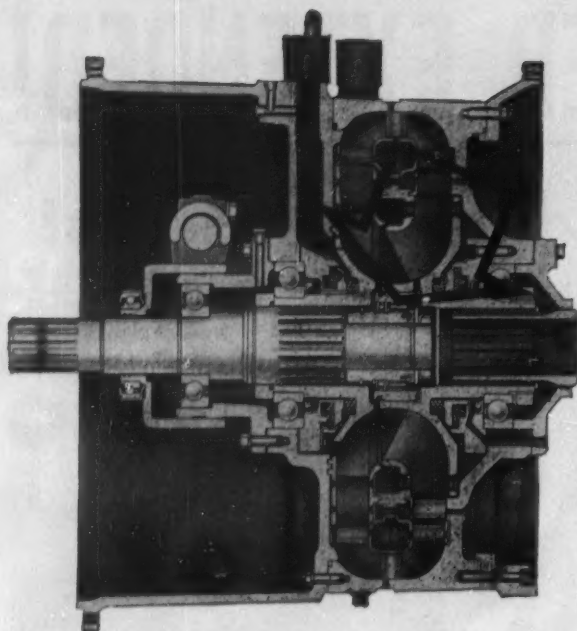
- ☐ We want further information on the new SKIL Saw trade-in offer.
- ☐ Have a salesman call to make a demonstration.
- ☐ Let us have a free 15-day trial.

Your name _____ Title _____

Company name _____

Street _____

City _____ Zone _____ State _____



Twin Disc free-wheel locks impeller and turbine together to provide absorption of braking horsepower by the converter. In locking the impeller to the turbine, the free-wheel forces the truck's driving axle to turn the converter pump wheel—providing smooth, powerful Hydrodynamic Braking.

When you specify torque converters for your heavy-duty off-highway trucks, be sure to get the *extra* advantages of Twin Disc Three-Stage Truck-Type design, with *built-in* Hydrodynamic Braking at *no extra cost*.

Pioneered by the Twin Disc Clutch Company, Hydrodynamic Braking in the Model CF Torque Converter is actuated automatically when the operator lets up on the accelerator. No accessory equipment or additional cooling system for braking is required.

Here is the most effective Torque Converter downhill retarding ever developed . . . smooth, effortless braking that gives your operators *complete control all the way down*. And by combining built-in Hydrodynamic Braking with friction braking of the engine, Twin Disc offers *maximum* downhill retarding *without shock-loading the transmission*.

Add the powerful torque multiplication of Twin Disc Three-Stage design (up to 6:1 at stall, highest in the field) and you have virtual *elimination* of uphill shifting as well as of downhill pedal-braking . . . providing *faster work-cycles with more payloads hauled per day—lower ton-mile costs—and savings on engine, tires, brakes, and drive-line components*.

This Dart Model 140 mining truck (below) climbs 15% grades with 22-ton payloads in *one gear*—comes back down without pedal-braking—by utilizing up-to-6:1 Converter Drive and built-in Hydrodynamic Braking of Twin Disc Model CF Three-Stage Truck-Type Torque Converter (shown above in cutaway). Request Bulletin 501.

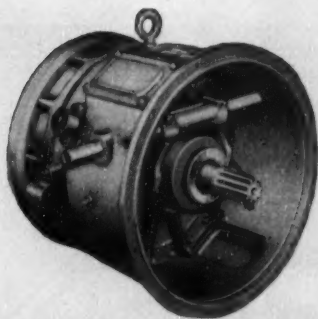
The Torque Converter with

Built-in Braking!



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES OR SALES ENGINEERING OFFICES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • TULSA



Twin Disc built-in Hydrodynamic Braking

Today—in construction, mining, logging, and in the oilfields—users of heavy-duty off-highway trucks are gaining distinct advantages from Twin Disc Truck-Type Torque Converters, designed for specific operating conditions.

The Model CF Torque Converter (above) provides *automatically-actuated* Hydrodynamic Braking and Converter Drive—controlled by depressing or letting up on the accelerator—for operations involving constant climbing and descending of steep grades. The *built-in* braking feature incorporates a freewheel, which forces the truck's driving wheels to turn the impeller for a smoother, more powerful braking effort up to 70% of the engine's hp.

For operations combining steep grades with long, flat runs, Twin Disc provides the Model DF Torque Converter, with *Fingertip-Controlled* Hydrodynamic Braking, Converter Drive, and Lock-Out Drive for maximum speed and economy.



BALANCED LAND-CLEARING . . . Continued from page 84



SMALL CRAWLER TRACTOR, a John Deere 40, slips into and out of tight spots where a large tractor is impractical—snags light loads quickly to lessen uneconomical hand labor.

as some of the trees dropped in the river and were carried away by the rising water and had to be retrieved downstream. There was also a large amount of driftwood and debris in both rivers that had to be recovered and burned. There were several islands in the rivers where large trees had to be cut into small pieces and burned, using manpower, as it was not practical to jeopardize big equipment in the river.

Prior to starting the job, it was determined that most of the work would involve a lot of hand labor. CECOA decided to try tractors in many places not generally suited to them, like steep rocky slopes. This was done with the calculated risk that higher maintenance costs on the equipment would be cheaper than unproductive manpower, which was proved on this job.

One pass of a crawler-tractor pushing a full load of trees down a steep slope is equal to the maximum efforts of 2 men for 1 day. With this in mind, it was essential that the labor be skilled woodsmen, experienced in landclearing. CECOA was in the process of completing a transmission line right-of-way clearing job for Connecticut Light & Power Co. at the time so it was decided to use this crew and enlarge the operation around it.

The men were experienced woodsmen trained by CECOA for this work. Most of them came from Canada and northern Maine. Tractor operators had to be recruited from this group, selected and trained to operate the tractors, winches and rakes. This was necessary, because local operators were

hesitant in taking machines up most of the walls. It was necessary to provide a camp, as the men did not want to live in tourist courts, which were the only available places in the area at the time.

The job was pushed hard from the start, and production has been high in spite of adverse weather and other unfavorable conditions. It is anticipated that it will be completed well ahead of schedule.

Supervising for CECOA are: Erickson, McPheters and W. O. Shepherd, superintendent. C. M. MacWilliam, hydraulic engineer, of Connecticut Light & Power Co., is in charge of the entire project, and inspection of the clearing operation is done by Frederick Lewis.

Wire Rope Makes Good Record

A SPECIAL WIRE ROPE manufactured by Bethlehem Steel Co. for use in construction of Chief Joseph Dam on the Columbia River in Washington has made an exceptional service record. The non-rotating rope was of 1½ in. dia and was used in 8- and 12-ft lengths on a Bucyrus 450 Special Monaghan crane. The first section of the special rope was in use more than 7½ months and showed a loss in breaking strength of only 0.66%, with the remaining strength still above the rated minimum strength of 228,000 lb for unused rope.

Three other sections of the rope on smaller rigs were still in service after more than 13 months. The long life is attributed to the non-rotating design.

Check price per pound of lifting capacity

There is a very quick way to determine which crane or excavator offers you biggest production capacity per dollar of equipment investment. Compare machines on the basis of price per pound of lifting capacity.

Remember, lift capacity is work capacity. Obviously, the machine with the heaviest lift rating not only picks up larger crane loads — it also has more strength and stability to handle bigger dragline and clamshell buckets on a wider work range — more power and speed to increase shovel and hoe production.

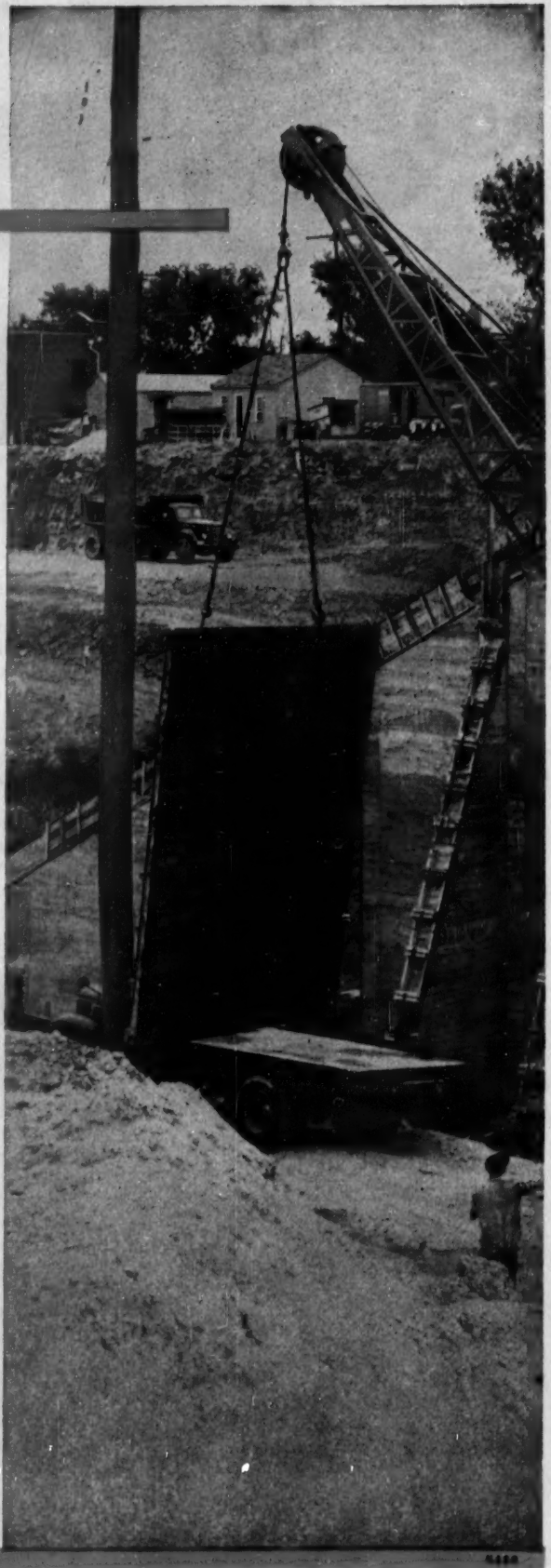
Check the Koehring lift ratings shown below — then ask your Koehring distributor to show you the figures on price per pound of lifting capacity.

compare for yourself:

KOEHRING MODEL	SIZE DIPPER	KOEHRING LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load)		PRICE PER POUND OF LIFT CAP.*
205 CRAWLER	½-Yd.	20,000 lbs.	30-foot boom at 10-ft. radius	?
205 ON RUBBER	½-Yd.	30,000 lbs.	25-foot boom at 12-ft. radius	?
304 CRAWLER	¾-Yd.	27,800 lbs.	35-foot boom at 12-ft. radius	?
304 ON RUBBER	¾-Yd.	50,000 lbs.	30-foot boom at 10-ft. radius	?
405 CRAWLER	1-Yd.	40,000 lbs.	40-foot boom at 12-ft. radius	?
605 CRAWLER	1½-Yds.	72,300 lbs.	50-foot boom at 12-ft. radius	?
1005 CRAWLER	2½-Yds.	159,000 lbs.	50-foot boom at 12-ft. radius	?

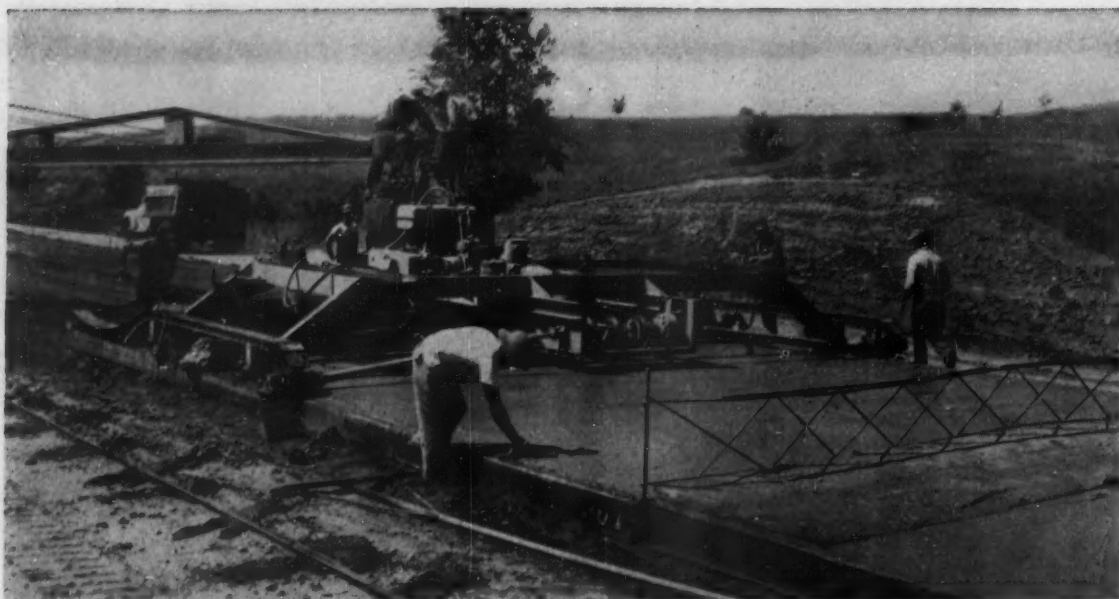


*Figures available on request—ask your Koehring distributor to see them.





KOEHRING COMPANY Milwaukee 16, Wis. Subdistributor: JOHNSON
PARSONS-KWIK-MIX



SLIPFORM PAVER developed and tested by the Quad City Construction Co., Inc. of Rock Island, Ill., is self-propelled. It will lay a

24-ft slab, 9 in. thick and can average 1,000 ft per 8½-hr day. This machine is more simplified than earlier models.

The Latest in Slipform Pavers

SINCE THE Illinois Division of Highways originated the idea of laying concrete base without the use of forms back in 1951, five machines have been built and tested and, according to officials of the highway department, all the machines have been successful (CM&E, Sept. 1953, p 128).

The latest machine developed and working was constructed by Quad City Construction Co., Inc., Rock Island, Ill. This one is self-propelled and features crawler tracks that operate inside the form, giving greater stability and control.

As so often is the case, necessity was the mother of invention in the development of this machine. Quad City received a contract to widen 9 mi of road and lay 1.84 mi of concrete base course 24 ft wide and 9 in. thick. The firm had 8- and 10-in. forms but could not get the State's permission to use the 8-in. form for the required 9-in. thickness. A decision was made to develop a formless paver and \$4,000 was set aside for its



PAVER REQUIRES an exceptionally smooth subgrade, so the firm designed and constructed this subgrader. This model is towed, but later ones will be self-propelled.

construction, which, as it turned out, was not enough. Carl Miers, the firm's mechanic, worked on the prototype 7 weeks to complete the machine. It worked the first time it was tested and required no adjusting. It will lay a 24-ft slab, 9 in. thick.

It has two 22-ft long, 8x10-in. steel H-beams inside which are housed tracks 10 in. wide. The rollers are in the track itself and not on the frame, as is customary. This arrangement takes up less

shoulder room and permits more space for operation of trucks.

The machine, followed by additional 16-ft slip forms, is guided by following the center steel. It is powered by a Continental engine salvaged from a junk yard.

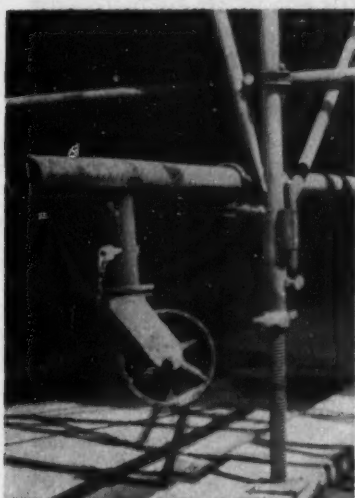
The paver has an adjustable strike-off in front, followed by a vibratory screed and oscillating belt. A burlap bag is attached to the stabilizing frame at the rear of the 16-ft slip forms.

To provide an exceptionally

smooth subgrade, the Quad City firm built a special machine with the same size track. This machine is towed.

The paver can pour an average of 1,000 ft per 8½-hr day and it's claimed its use will reduce to 20 the number of men required.

Quad City presently is building a second machine which will be used by Arcole Midwest Corp. on a paving project in Cook County, Ill. This improved machine can be widened in 1- and 2-ft sections to provide for paving width of 20 to 24 ft and from 7 to 10 in. thick. It also will incorporate adjustments for crown elimination on banked curves. More power will be installed and a self-propelled subgrade machine will be built to match the paver.



Scaffold-Shoring Rolls on Casters

SCAFFOLD-SHORING UNITS equipped with runners and casters were rolled intact by a contractor on a new building in Pittsburgh. To form a 250x400-ft ceiling, Melton-Stuart Co. set up 50x25-ft units of Universal scaffolding. Each unit consisted of three parallel 50-ft runs braced with simple locking mechanisms and tied together with pipe and clamps.

When a unit was rolled in position, it was raised to the required elevation with built-in screw jacks. Total load on each unit was about 195,000 lb. After the 8½-in. thick slab was poured and cured, a unit was lowered about 6 in. on the screw jacks, placing the 22,000-lb rolling load on 6-in. casters. A small tractor easily rolled the unit to the next position. Forms were reused four times.

it's what's inside that counts



THE EFFICIENCY OF

Luber-finer

PATENTED PROCESS

PACK

**HAS NEVER
BEEN EQUALLED!**

DON'T BE MISLED BY PRICE ALONE!

There is NO substitute for DIESELPACK'S Patented Filtering Process for Heavy Duty Compounded oils AT ANY PRICE. The DIESELPACK cleans more oil faster—keeps it CLEAN longer—and gives more service and better engineered protection than any other filtering element. It PAYS to get the BEST!

STANDARD OF THE INDUSTRY SINCE 1936

✓ PROTECTS ENGINE

The DIESELPACK is designed to remove not only ABRASIVES but also CONTAMINANTS such as moisture, carbon, acid, etc., from oil, and is engineered to keep the filtering media and the removed contaminants from migrating back into engine.

✓ EXTENDS PERIODS BETWEEN DRAINS

The DIESELPACK collects and holds even the most finely dispersed contaminants without affecting or removing compound additives from the oil. A glance at the dip stick will show that the oil is CLEANER—symbol of better lubrication and longer oil life enjoyed only by Luber-finer users.

✓ TAKES LESS OIL

The DIESELPACK because of its engineered construction requires 2 to 4 quarts less oil than spongy substitute filter elements being offered for use in the Luber-finer housing. This is an additional saving enjoyed when using the DIESELPACK.

LUBER-FINER PACKS AVAILABLE:

1. REFINING PACK—Introduced to the public in 1935 for use with straight mineral oils, fuel oils, hydraulic oils, and inhibited industrial oils.

2. DIESELPACK—First made available in 1941, the DIESELPACK was primarily designed for use with H. D. detergent compounded oils and has also achieved outstanding results when used with fuel oils and straight mineral oils.

WRITE FOR COMPLETE INFORMATION TO DEPT. 73

LUBER-FINER, INC., 2514 S. Grand Ave., Los Angeles 7

Cummins Simplifies Fuel System

FUEL SYSTEM SIMPLIFICATION on its diesel engines has been so successful in extensive field trials that the Cummins Engine Co. has switched to the new PT fuel system for its entire production of high-speed diesels, ranging from 60 to 600 hp.

In an effort to broaden the range of diesel applications, the company found it necessary to design engines operating at higher crankshaft speeds. Higher rpm's give greater power for the same weight engine. Fuel systems had to be improved to make this possible.

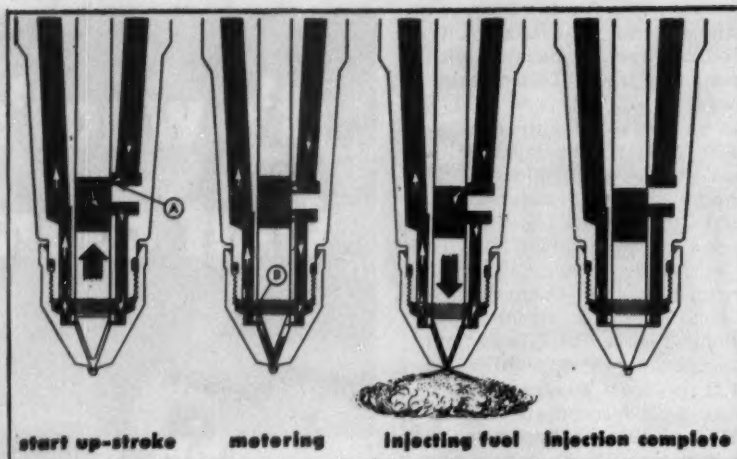
Secondly, Cummins engineers decided that any new system should be simple and inexpensive—actually should better the simplicity and cost of gasoline engine carburetion and ignition systems.

It was important that fuel consumption be kept low at all loads and speeds, that engine torque remain high and that there be quick response to the throttle and sensitive governor. Maintenance was to be simple, requiring few special tools, and major components had to be interchangeable on all engine models. It also was decided to try for a system adaptable to existing Cummins engines.

Pressure and Time

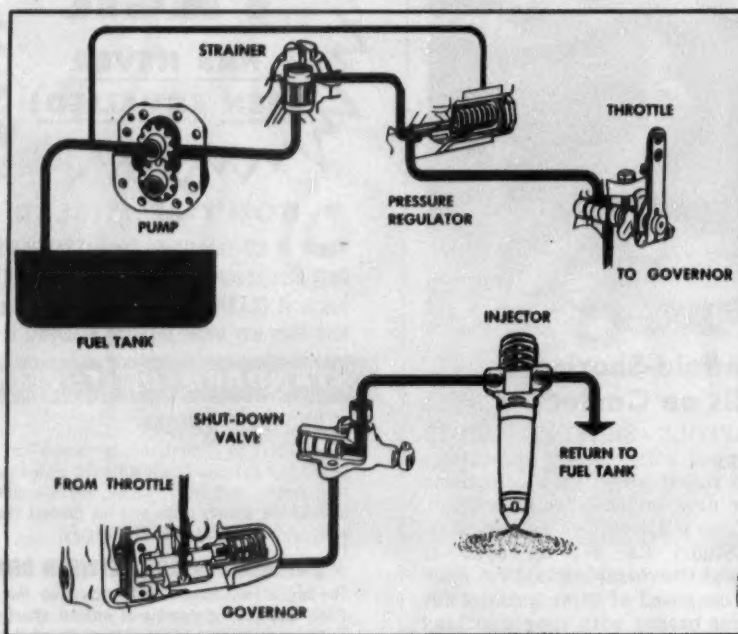
The existing Cummins injector employed mechanical force for injection, being actuated by the engine camshaft. It was redesigned so that it also performs the metering function, making fuel pump design less complicated. A simple fixed orifice is the metering device. By varying either pressure or time, or both, it was possible to regulate the amount of fuel passing into the cylinder—and the engine's power. The system was adopted and hence the name PT (Pressure Time) was established. The PT injector is far simpler in operation and maintenance than earlier models, has no check valves and contains only 7 parts compared with 11 for its predecessor.

With the metering function transferred to the injector, all the



FULL-FLOW SYSTEM circulates fuel through injector, with 80% of fuel returned to the tank. On the upstroke the fuel supply hole (A) is uncovered, permitting fuel to circulate through the injector and out drain at the left. Metering begins when plunger on upstroke uncovers the metering orifice (B) at left. Length of time orifice is uncovered and the system pressure supplied by the fuel pump determine quantity of fuel injected. In

third sequence, plunger moves downward and forces fuel through holes in the tip of the injector cup and into the engine cylinder as an exceptionally fine spray—in a predetermined pattern to obtain the best possible mixing with air and complete burning. Plunger remains seated after injection until next cycle begins. Injection is controlled by engine camshaft; fuel pump is not timed to engine, simplifying installation.



SCHEMATIC PT FUEL FLOW DIAGRAM with units in full hp positions illustrates simple nature of system. Average mechanic learns in a few hours how to troubleshoot, repair and rebuild it. Normal service work is done with hand tools found in mechanics' kits.

fuel pump has to do is deliver an adequate quantity of fuel at proper system pressure. The new PT pump has only five functional parts and assemblies: A gear pump; a pressure regulator; throttle control shaft; governor; shut-down valve. A tachometer drive is included.

There is not a single check valve in the system.

All these units are assembled into one compact housing that weighs a mere 13 lb, as compared with an earlier model that scales 104 lb. The total number of parts in the PT fuel system has been

CUT LOADING COSTS WITH FAST-RUGGED EIMCO'S

Yes! You cut costs when you use Eimcos for loading.

NOTE these advantages:—

Advantage: Eimcos dig and load materials that are difficult or impossible for other loading equipment.

Reason: Eimcos are designed for tough jobs — digging and loading rough, broken rock. Tracks are designed to oscillate freely even with the loader attachment. The bucket design permits digging in frozen stock piles, rough bottoms, heavy ores and in sticky clay or unbroken conglomerate.

Advantage: Eimcos are more maneuverable.

Reason: Eimcos use independent track control. Separate levers control each track and one track can be run forward while the other runs reverse.

Advantage: Eimcos last longer.

Reason: Torque converter drive is standard on Eimcos. All castings are alloy steel, all construction is extra heavy-duty.

Advantage: Eimcos load faster.

Reason: The overhead principle developed by Eimco is faster. Complete cycle is 10-12 seconds. Shifting from high to low on tractor or loader is done in motion. Shifting from forward to reverse can be done at full speed.

Other Advantages Include: Better visibility with the operator up front. Easier maintenance with clutches that never need adjustment and elimination of all clutches, brakes and gadgets in the final drive.

Let an Eimco engineer show you how you can cut loading costs on the next job.



Eimco 105 with bulldozer attachment



Eimco 105

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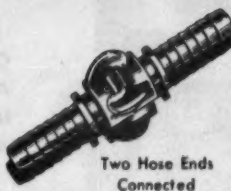
THIS *Versatile* Coupling

while used primarily for air-operated tools in field and factory, is equally efficient for water, oil and spray service. Illustration shows hose end and female I.P.T. end connected.



"AIR KING" *Quick-Acting* *Universal* HOSE COUPLING

The "AIR KING" will reduce operating costs on every job requiring quick connection. Heads are locked by simply pressing together and giving one a quarter-turn. These locking heads are identical for all sizes of hose or threaded ends, permitting the coupling of any two sizes of hose, or hose and pipe, within the "AIR KING" size range. Equipped with patented safety locking device. Available in bronze or rustproofed malleable iron, in sizes up to 1".



Two Hose Ends
Connected



Male
I.P.T. End

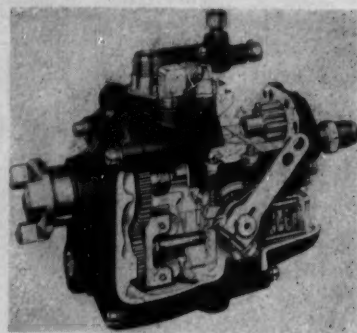
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IMPROVED FUEL SYSTEM . . .

Continued on page 92



PT PUMP CUTAWAY. Compact housing contains all elements except fuel lines and injectors, weighs only 13 lb, has fewer parts. Pump can be calibrated on the engine.

reduced to 182, as against 415 in the former disk-type pump system.

The PT system is a full-flow system. Fuel circulates through the injectors, in one side and out of the drain line back to the tank at the other. The amount required for injection is taken out of this flow as power and speed indicate. Approximately 80% of the fuel delivered to the injector is returned to the fuel tank. This makes purging of air automatic.

Fuel delivered through a fixed orifice in a given time interval will increase or decrease, according to pressure variations. But the time interval varies with engine rpm. Hence it was necessary to build a pump that would change fuel pressure (consequently the charge) in quick response to the throttle and governor. When the engine overruns the governor, as on down grades, all fuel is cut off by the governor — giving a maximum braking effect.

For High Speeds

The new PT system pump provides these functions in spite of its simple construction. It can be calibrated right on the engine and, since the metering and timed injection are performed by the injectors, the pump need not be timed to the engine.

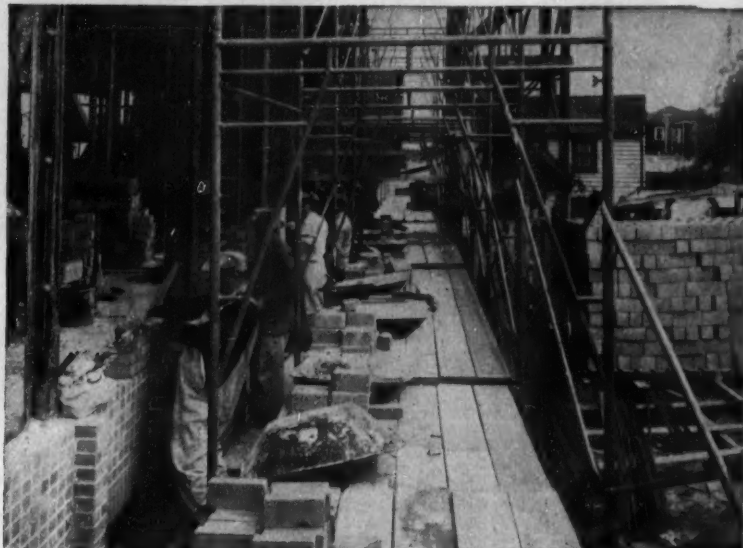
The new system works well at high speeds, too. It has functioned perfectly in engines operating in excess of 4,000 rpm.

Simplicity of the PT system is such that the need for a diesel fuel system specialist is pretty well eliminated. Cummins found that the average mechanic learns

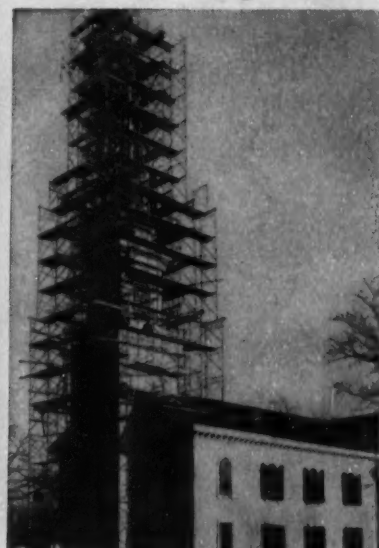
(Continued on page 98)

Building Construction News

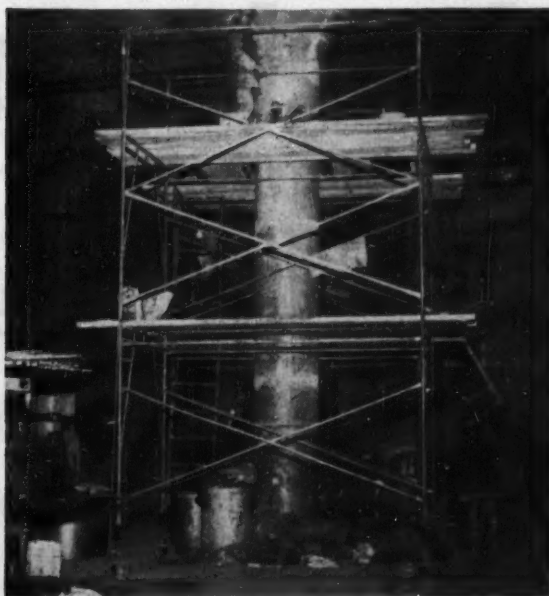
...by PS Co



WALKROOM AND WORKROOM—On masonry jobs it is important to get mortar and brick from the hoist tower to the masons quickly and easily, without delaying work. General contractor Cuzzi Bros. and Singer solves the problem on this 4-story Brooklyn job by using "Trouble Saver"® Sectional Steel Scaffolding for a wide, unobstructed platform. The 6'6" shallow-trussed frames provide plenty of headroom for delivery of materials and support a 5'-wide platform to hold them. Masons work from a separate, movable 20"-wide platform laid on sidewall brackets attached to the main scaffold. This scaffolding method keeps materials easy to reach, puts men at most convenient level.

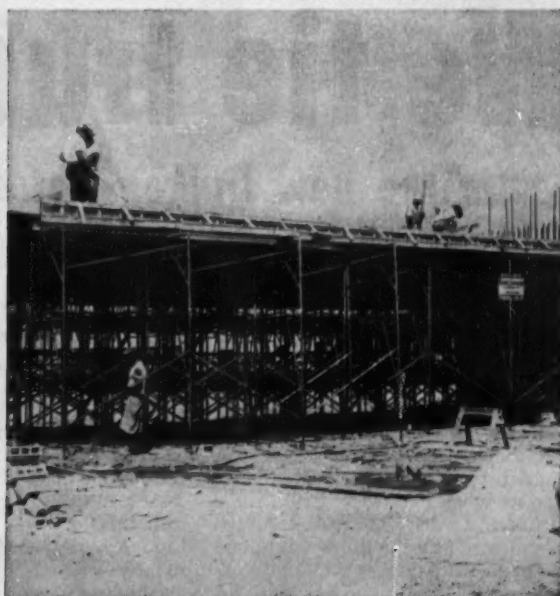


TAILORED TO FIT — This 160 ft. high, 260-frame "Trouble Saver" Sectional Steel Scaffold puts all workmen close to repairs on steeple and spire on First Congregational Church, West Haven, Conn. See how standard 5 ft. wide "Trouble Saver" frames conform to irregular contours. Patterson Construction Co., New Haven, is the contractor.



GOOD TRAVELERS—"Trouble Saver" Rolling Scaffolds were easily moved from one capital column to another during construction of a huge warehouse for Colgate-Palmolive in Jersey City, N.J. The mobile scaffolds, 5'x10'x14'-high, quickly and safely placed cement finishers conveniently close to overhead work. "Trouble Saver" Sectional Steel Scaffolding was also used for concrete shoring on the job. George A. Fuller Company was the general contractor.

To help you solve any scaffolding problem, PS offers a complete nation-wide engineering service—available locally. See the Yellow Pages in your 'phone book for the nearest Patent Scaffolding office or representative handling "Gold Medal" Scaffolds. Rentals and Sales.



GOLDEN SHORES—To provide safe, economical shoring for this concrete slab overpass, joining two parts of the Chatlos Motel in Golden Shores, Fla., the Taylor Construction Co. rented 413 5'-wide "Trouble Saver" Sectional Steel Scaffolding frames. Auto traffic will pass beneath the overpass, built on a curve. The center panel of the 8'-wide slab varies in thickness from 3' at the abutment to 16' at the center of the arch.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY



THE PATENT SCAFFOLDING CO., Inc.

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Branches in all principal cities



We tie truck axles in

in the new Timken-Detroit indoor proving ground

... and only Timken has it!

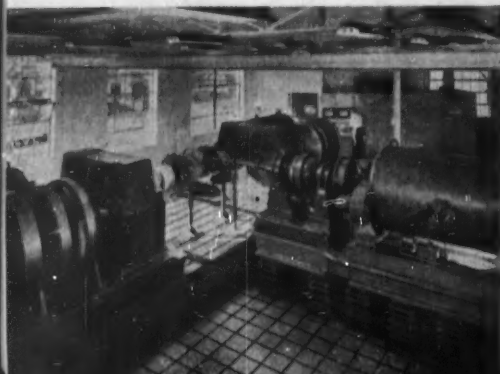
We smash, twist, jerk and over-load them. Match every imaginable hauling situation. Then add a few ruinous tricks of our own.

It's done on purpose. So we can tell you in advance that a Timken-Detroit axle can take a more brutal beating on the job it was designed for than any other axle made.

To prove it, we condensed a multi-thousand acre proving ground into one room. In it, our engineers can apply 50 years of experience in building axles for trucks, buses and trailers. Here axles

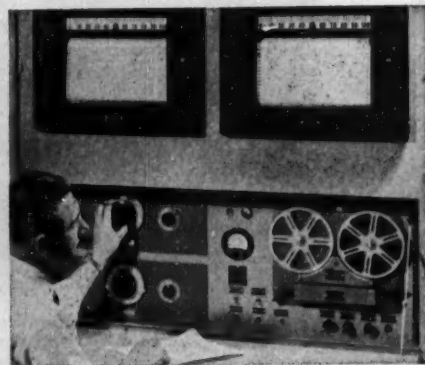
and gearing are subjected *indoors* to any possible *outdoor* hauling condition. Axle performance is measured and analyzed under absolute scientific control!

As a result: you enjoy longer axle life; less maintenance, repairs and downtime; lower operating costs; fatter profits. No wonder Timken-Detroit axles are the choice of manufacturers and owners everywhere!



How TDA proves axle quality in this "Torture Chamber"

We pick one of our axles at random ... then duplicate a hauling condition, hour after hour, day after day ... simulating half a million miles of the toughest driving situations in just a few days. Or "invent" a test like going uphill with a full load from California to New York non-stop. There is no other axle testing like it in the world!



This is our "truck driver." He works in our "Torture Chamber." Above him are graphs showing speed and torque performance under any operating condition he chooses ... soft ground at full load ... mountains ... express highways or side roads. With special dials, recorders and electronic devices, he actually *drives* the axle with scientific accuracy from his chair!



Soft ground? Heavy load—all up-grade? That's a tremendous strain on an axle. But it's nothing compared to what we do in the indoor proving ground! For instance—we take an axle shaft and twist it 14° forward and backward, 36 times a minute, 24 hours a day, week after week. And that's only one test to give you low-cost performance, long axle life regardless of your hauling conditions.

knots



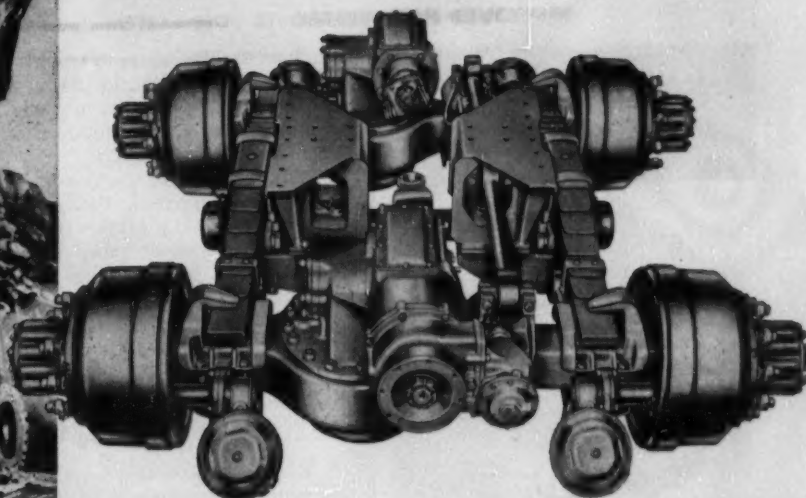
TIMKEN *Detroit* AXLES

TIMKEN DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN



"TORTURE-TESTED"
to Save Money on the Job

**WORLD'S LARGEST MANUFACTURERS OF
AXLES FOR TRUCKS, BUSES AND TRAILERS**



THREE TYPES: Hypoid-helical double-reduction, optional inter-axle differential. Worm drive, without inter-axle differential.

For six-wheelers . . . the TDA Tandem Drive Rear Axle Unit

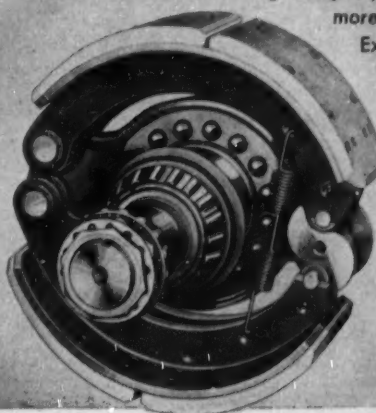
Now—the world's finest tandem drive rear axle unit for heavy-duty motor trucks! And with these features, developed, introduced and pioneered by TDA: (1) Available in 3 types of final drives and 3 capacities. (2) Top-mounted straight-line final drive eliminates propeller shaft angularity. (3) Optional inter-axle differential . . . spur gear design, cab-controlled power-lockout. (4) Torsion flow axle shafts . . . guaranteed for 100,000 miles or three years, whichever occurs first. (5) Hot forged steel axle housing . . . guaranteed for the life of the vehicle. (6) Unit-

mounted "P" series power brakes . . . for longer life, greater economy and efficiency. (7) Cradle ride spring suspension and paralleled torque rod system . . . maintain correct alignment and weight distribution regardless of driving and braking conditions. (8) Exclusive two-piece trunion tube bracket speeds servicing. (9) Removable torque rod and spring guide brackets . . . for positive alignment, easier replacement. (10) Rubber torque rod bushings and rubber spring seat bushings . . . eliminate metal-to-metal contact. Require no lubrication.

New TDA brake shoes save up to 40 lbs. per axle

- Lightweight, pressed steel construction to give you more payload plus long wear and safety.

Exclusive ¾" TDA "Econoliner" brake liners held rigidly by 12 deep-set rivets per block—not bolts. Liners are thickest at center where greatest wear occurs—taper down at ends. Result—longer wear, greater stopping ability. New cam roller mountings never seize or brinell. Light nylon camshaft bearings wear up to 4 times as long! It's America's new brake shoe!



Plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York • Ashtabula, Kenton and Newark, Ohio • New Castle, Pennsylvania

HOW TO HANDLE WET JOBS

NEW SEA LIFE HOME FOR MARINE STUDIOS

Marineland, Fla.

Contractor: Arthur Perry, Inc.



50 POINTS, 240-ft header: What volume could be handled by a wellpoint system of such size, working in very coarse water-bearing sand just a few ft from the ocean? Answer below.



3,960,000 GALS per day were pumped round-the-clock for the life of the job—this entire flow handled by one Griffin Vac-u-matic wellpoint pump.

SUCH exceptional drainage volume—it's 55 gals per minute for each point—will surprise many contractors. Others know from repeated experience the superiority and efficiency of the Griffin system.

GRIFFIN

WELLPOINT CORP.

581 East 141st Street, New York 54, N. Y.
Hemmond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

IMPROVED FUEL SYSTEM . . . Continued from page 74

enough in several hours to trouble-shoot, repair or rebuild its new system. Normal service work is done with the usual hand tools found in a mechanic's kit.

Troubleshooting of the system on the engine is simplified. Two gages, one attached to the intake side of the pump and one attached to the fuel manifold between the pump and injector inlets, give pressure readings to determine system functioning.

Early laboratory and field tests

proved out the basic PT fuel system design. Then a pilot production of approximately 500 PT fuel systems was sent out on field tests through the country. Not a single user returned a PT system when the test was terminated. They now are available throughout the world and exchange programs to make economical conversions of old engines have been established.

The PT fuel system is standard equipment on all Cummins diesels built since July 1, 1954.

Do You Worry Your Family?

This letter was written for railroaders, but the shoe fits construction men perfectly. CM&E publishes it by courtesy of the St. Louis-San Francisco Railway Co. and the Association of American Railroads.

Dear Daddy,

When you read this I'll be safe at school, and I hope you'll be cooled down by the time I get home after school is out.

I'm writing to you because I know you wouldn't listen to me if I tried to talk it over with you, but this way you will probably read what I did not have the nerve to say to your face.

I'm worried, Dad. Not about me, but about you. I am a big boy now and I owe so much to you in teaching me a lot of things I couldn't learn at school. But what I can't understand is how you could teach me so much and not learn some of the things yourself.

You remember the little brown book of safety rules the railroad gave you to study but which you threw into the bottom drawer of the desk and told Mom you knew everything in the book. Besides you had been working so long that it came natural to do things the way the book said and that the book was for new men, not for men like you.

Well, I found the book the other day when I was looking for an old picture album and read it through. Dad, I was down at the railroad yards Saturday and watched you switching cars and I believe it would be a good thing if you would read that little book, even if you do know everything in it.

When you told me not to walk on the top of Wilder's wall next door because I might slip off, I quit talking on the wall. The little book says not to step on rails but I saw you stepping on them Saturday.

You sent me to the grocery one day then scolded me for running, said I might trip and fall, but I saw you running in the yards.

You told me not to ride my bike without holding on to the handle bars, but I saw you riding on the engine without holding on.

You told me to look both ways before crossing streets and the little book says to look both ways before crossing tracks, but you didn't always do that Saturday.

Dad, it made me feel bad to see you doing things the little book said you shouldn't do and I wondered why!

When you told me not to do something I always tried to do what you said because you are my father and because I know you are telling me for my own good.

Dad, don't you think that little book of safety rules is telling you not to do things for your own good?

I love you, Dad, and don't want you ever to get hurt or crippled. If I mind what you tell me would it be so terribly hard for you to mind what the little safety rule book tells you?

I'm sorry I found the book and sorry I went to where I could see you working in the railroad yards because now Mom and me have got something to worry about.

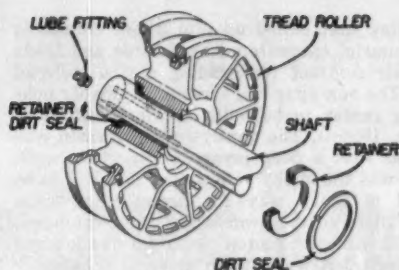
Mom said it would be best for me to write you this letter—better than for her to talk to you—but Dad, don't you see there's really no difference in whether you break the rules in the book or whether I fail to listen to the things you teach me—it amounts to the same thing: we will both be losers and neither one of us wants to lose.

So how about it, Dad? Then Mom and me quit worrying? And oh, yes, I'm still going to do my best to obey everything you tell me because I know you love me and want to teach me right.

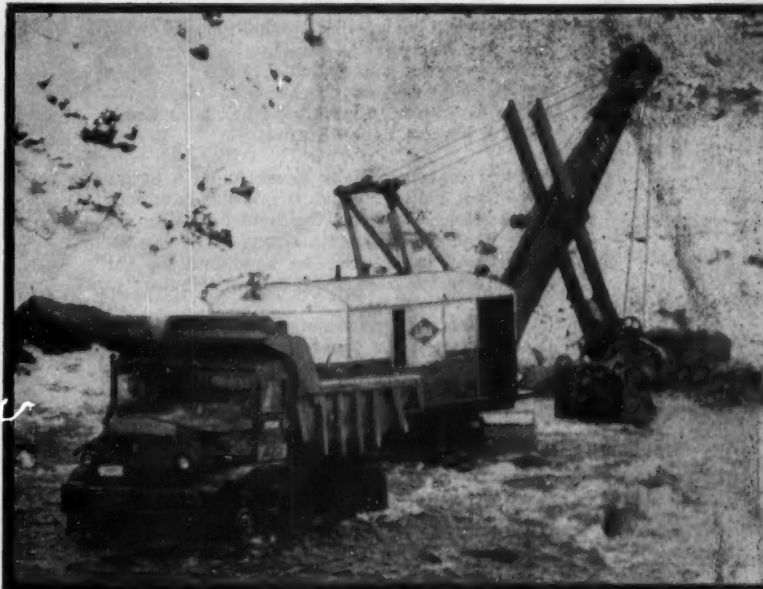
Let's make a bargain. I'll do what you say and you do what the little brown book says. How about it?

Your affectionate son

Robert



LIMA DIRT SEALS CUT DOWN-TIME AND MAINTENANCE COSTS



This LIMA shovel, demonstrates the importance of LIMA'S dirt seals and grease retainers.

In such work, abrasive material which wears out the bushings and shafts of ordinary shovels is excluded. LIMA seals the lubricant in and dirt out, thereby reducing friction and prolonging the life of bushing, roller and shaft.

COMPARE! No other machine gives you as much as LIMA!

1. Bronze bushings in tread, idler and drive rollers are protected by piston-type dirt seal rings and retainers.
2. All gears, smaller parts and shafts which are subject to extra wear are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation to eliminate excess counterweight.
4. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.
5. Big capacity drums and sheaves lengthen cable life by reducing the need for double wrapping and sharp bends in cable.
6. Full air controls on travel, hoist, swing and boom hoist, result in smoother, more precise operation, minimum maintenance and less operator fatigue.
7. Torque converter (optional) automatically adjusts speed to load requirements, minimizing shock loading, making performance smoother and faster.
8. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels ($\frac{3}{4}$ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable).

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SHOVELS • CRANES
DRAGLINES • PULLSHOVELS



BALDWIN-LIMA-HAMILTON CORPORATION

Construction Equipment Division

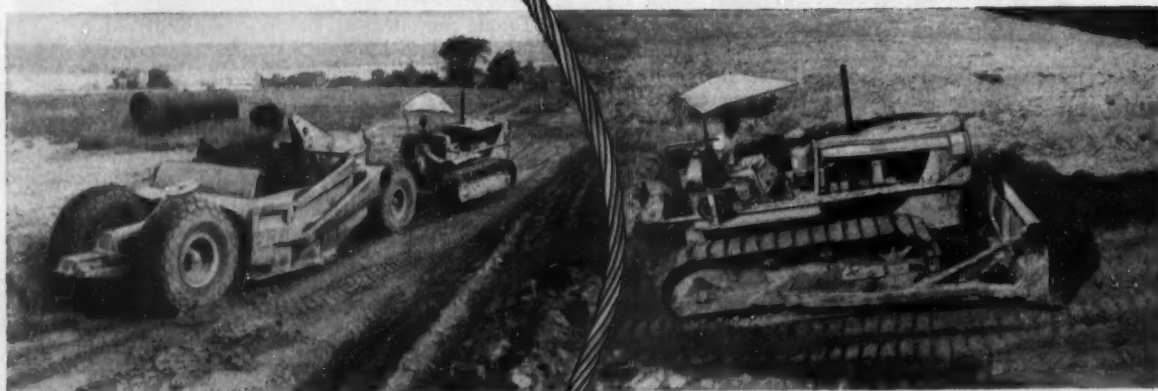
LIMA, OHIO, U.S.A.

Construction Equipment Division

**TOUGH
DIRT
MOVES
FAST
ON
RAIL SPUR
CONTRACT**



L. J. "Louie" DIETZ



Big scrapers — equipped with quality-built Preformed Yellow Strand Wire Rope — are taking off the deep topsoil, exposing the tough, wet yellow clay below. The new rail spur will be about $\frac{1}{2}$ mile long.

Wet clay that balled up into 2-foot clumps is the material encountered by Swords and Dietz on their contract for grading a new railroad spur. The new spur will serve a newspaper publishing center to be built on the outskirts of Peoria, Illinois. The gently-rolling terrain was covered with a deep layer of topsoil, beneath which was the sticky yellow clay that had to be moved to make way for drainage culverts. Louie Dietz, of the Swords and Dietz company, brought in dozers and scrapers for the job and the tough dirt was on the move in a hurry.

The Peoria contracting firm has handled every type of earthmoving — from leveling for homes to stripping for gravel. Louie Dietz has been in the business for many years — and for many years his choice of wire rope has been Broderick & Bascom Yellow Strand!

Dietz reports, "We've never found a better rope than Yellow Strand. It gives us outstanding service. It has just the right flexibility for easy handling, yet has a strong body. We always keep extra reels on hand and we get Speedi-Service from our B & B distributor."

You, too, can get outstanding service from Yellow Strand on your equipment. Call your nearby Broderick & Bascom distributor for a sample of Speedi-Service and for longer-lasting Yellow Strand Wire Rope!

BRODERICK & BASCOM ROPE CO.
4203 Union Blvd., St. Louis 15, Mo.

SPECIFY

Yellow Strand

FOR SAVINGS . . . SAFETY . . . SPEEDI-SERVICE

A Swords and Dietz dozer brings a blade full of wet clay out of a hole. This dozer has a B & B Dozereel — a mounting device that can save as much as \$60 on each reel. Blueprints for the bracket can be obtained without charge from your B & B distributor or from Broderick & Bascom Rope Co.

Next Steps in Atomic Progress ... A Challenge to American Industry

The purpose of this editorial is to throw light on the significance for American industry of recent changes in the statutes that control the development of atomic energy.

The need for clear light on the meaning of this new legislation is made more urgent by the political confusion and distortion that marked its course through Congress. The politically inspired charges of "giveaway" that delayed its passage—charges that were almost totally unrelated to the legislation itself—helped to obscure the vital importance of the step finally taken by Congress.

In sober, post-Congressional fact, the principal significance of the new atomic legislation is that it extends to private enterprise responsibility for the development of peaceful uses of atomic energy, whereas heretofore this responsibility has rested in a tight government monopoly. **And this extension is made on terms that emphasize the responsibility far more than they open any opportunity for economic gain in fulfilling it.** The revised Atomic Energy Act provides that:

1. Industry may now own and operate its own nuclear reactors, under license from the Atomic Energy Commission. And it may build and sell nuclear reactors for export.

2. Industry may use—but not own—nuclear materials at the discretion of the Atomic Energy Commission.

3. The Atomic Energy Commission will make available to industry scientific knowledge

that may be useful in developing peaceful applications of nuclear energy.

4. For the first time, industry will have the right to patent inventions in the field of non-military nuclear energy. However, "basic" discoveries must be made available to all companies in the field for a period of five years, after which they, too, will revert to normal patent status.

Two Kinds of Know-How

These provisions, despite the imposed limitations, represent the first positive step toward development of nuclear energy for peaceful applications in the United States. Potentially useful knowledge, previously locked in the minds of government scientists, will now be available to all those who are willing and able to put it to work for the good of mankind.

The advantages to be gained from enlisting the talents of American industry in the development of peaceful atomic applications are imposing. As *The* (London) *Economist*, Europe's leading economic journal, recently remarked, "The atomic scientists are in a position to surmise how atomic energy can be applied... but they lack the specialized knowledge of engineering design and operating technique just as industry itself lacks atomic knowledge." Now the engineers of private industry need no longer lack the atomic knowledge, and there is granted to them at least a restricted freedom to apply it to the solution of their engineering and operating problems. (Continued on next page)

But the new opportunity for private industry to find constructive uses for the science of nucleonics carries with it a grave responsibility. These uses must be so developed that they will benefit the people of all the free nations. It is essential that the United States, which pioneered in developing lethal uses for atomic fission, demonstrate to the world our paramount interest in its peaceful application. It would be a moral set-back to the free world almost beyond calculation if the Communists should be able to offer to the poorer nations of the world the benefit of low cost atomic power—provided by Communist technicians—while we concentrate primarily on building our stockpile of atomic and hydrogen bombs.

Race For a Peaceful Victory

Most of the experts are agreed that it may be many years—perhaps ten, fifteen or more—before the cost of electricity from atomic fission can be reduced to a level that will make it competitive with conventionally produced power in most regions of the United States. But most of the world is not nearly so fortunate as we are in power resources. Electricity, even at a cost far higher than the average that prevails in the United States, would be a blessing in many countries, and the nation that provides the technology to bring it into being will score a great moral victory.

The useful potential of nuclear energy is not restricted to the generation of electric power—although twenty years from now this use will be highly important to the power industry of the United States. Even with the limited research that has been done in this field thus far, the use of radioisotopes—the radioactive products of atomic reactors—is saving American industry an estimated \$100 million a year. Commissioner Campbell of the AEC, who made this estimate, believes that these savings may well reach \$1 billion a year within ten years. Radioisotopes are already at work in industries ranging all the way from paper manufacturing,

where they measure paper thickness, to pipeline transportation, where they mark the dividing lines between shipments of different products (at an estimated saving of \$500,000 a year). Medical applications of these same radioisotopes hold promise of longer and more comfortable lives for those who are stricken by cancer and other diseases.

Above All a Challenge

The new Atomic Energy Act is a crucial stride toward the day when all these benefits—and undoubtedly others not yet revealed by research—will be realized. But it is a step that is essentially permissive. It still leaves it to private industry for the most part to decide what is to be done and how soon.

The new act is thus, above all, a challenge. It confers on private industry the responsibility to assume a leading role in the development of peaceful uses for nuclear energy, a step long urged by NUCLEONICS, a McGraw-Hill magazine devoted to atomic energy. To achieve a success in this task that will measure up to the requirement of the national interest, this development must command all the resources and ingenuity that private enterprise can apply—and do so without promise of glittering prizes surely to be won. **But now that the responsibility has been defined and the challenge offered, American industry will, we believe, measure up to its grave and mighty import.**

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.


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Donald C. McGraw
PRESIDENT

McGraw-Hill Publishing Company, Inc.

TAKE IT FROM A MAN WHO KNOWS

HERE'S A MISSOURI CONTRACTOR WHO SAYS...

S. HOUGE  *Registered Professional Engineer*
SPRINGFIELD, MO.
September 23, 1954

Austin-Western Company
Aurora, Illinois

Gentlemen:

After using our new Austin-Western hydraulic crane for approximately three months, we would like to express our thoughts to your company as to the maneuverability of this piece of equipment.


Up to date we have laid approximately 11,000 lineal feet of concrete pipe ranging from 48 inches in diameter down to 12 inches in diameter.

The location of this drainage pipe was such that it was impossible for us to use a crane with a long boom attached, on account of the high tension transmission lines and the large lead telephone cables that were approximately 14 feet above the ground. Also this drainage was located in places that were inaccessible with other type of equipment. Our Austin-Western hydraulic crane due to its horizontal and telescopic boom made it possible for us to place all this tile with two workmen. Otherwise, it would have required ten workmen with a flat bed truck to transfer these heavy concrete pipes from the stock pile to the site.

It also replaced another machine that would have been necessary to perform these operations had we not purchased our Austin-Western crane. Generally, we are very pleased with the operation of this equipment as of date and will recommend same to other prospects who wish to contact us for further proof of the maneuverability of this equipment.

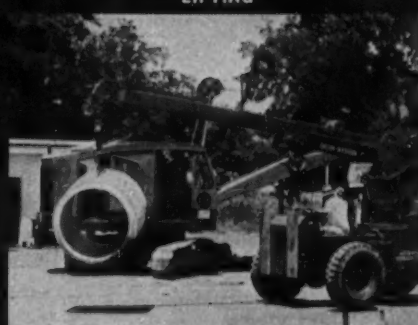
Very truly yours,
R. S. Houge
R. S. HOUGE
P.E.

RSR
jr

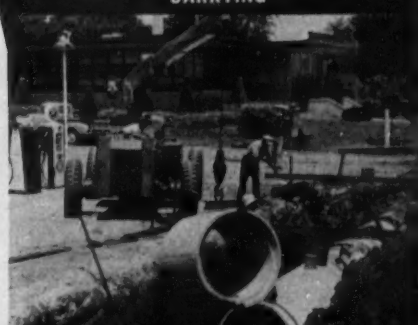
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Road Rollers • Hydraulic Cranes

AUSTIN-WESTERN COMPANY

607 Farnsworth Avenue, Aurora, Illinois

Please send complete information and literature on the Austin-Western Hydraulic Crane.

Name

Title

Company

Street

City Zone State

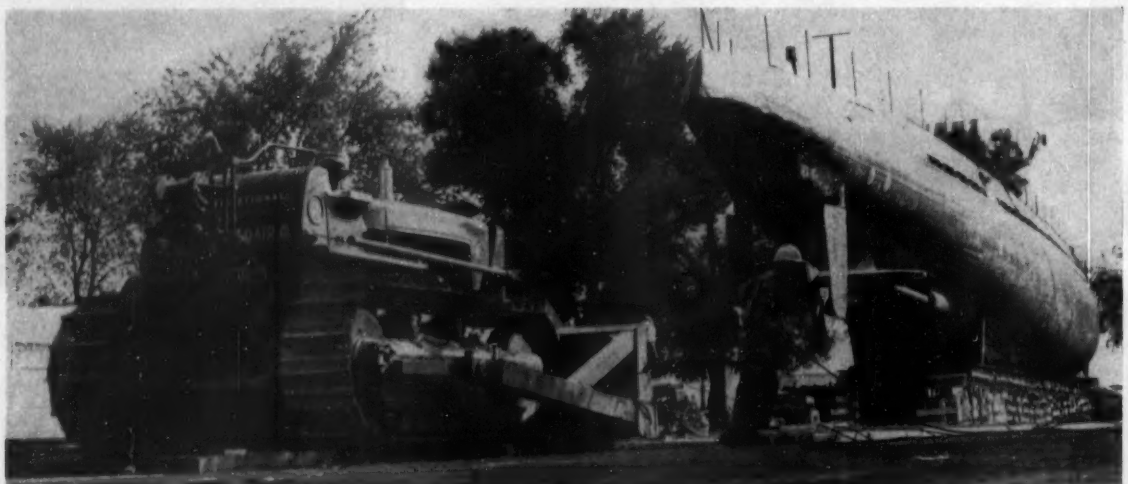
A Submarine Comes to Chicago



CURIOUS SAFETY SIGN along a busy expressway informs the public that LaPlant-Adair Co., Indianapolis building mover, is busy moving the captured former Nazi submarine, U-505, 700 ft—from the sandy beach of Lake Michigan across Chicago's Outer Drive to a permanent exhibition site at the Museum of Science and Industry.



SAND DIKE 9 ft high is hastily dozed along beach to protect sand-supported cribbing from breakers whipped up by strong winds. U-505 was floated to beaching location opposite museum where temporary pier had been erected. The big fish's supporting cradle rolled along easily over 2 1/2-in. steel rollers resting on 80-lb rails.



ANOTHER STRAND of wire rope is wrapped around dozer blade of International TD-24 that did utility work during the moving. Here the big crawler acts as an anchor for winching operations as sub comes close to its permanent concrete piers.



Photographs taken on the job in Long Island, N. Y.

Here's what they say about the new **MICHIGAN[®] 3/4 YARD**

Contractor: Hendrickson Bros., Inc., General Contractors
Valley Stream, New York

Job: Excavation and pipe laying for Southern State Parkway, Long Island

MASTER MECHANIC:

"We tried out the new T-24 for a week; and, because it did such a good job in that short time, we bought it."

OPERATOR:

"It's got delicate control and positive action. I can put the bucket down just where I want it, pick up a cable or wooden stake and not even disturb the dirt. It's a fast machine."

OILER:

"This Michigan is an oiler's dream. The liberal use of ball bearings on shafts, drums and rollers means less wear and much less oiling. All we do is oil our T-24 once a week."

There's little to add to these Hendrickson statements—except to emphasize that you, too, will move bigger yardage faster and at less cost with a MICHIGAN Series "24" 3/4-yard excavator-crane. Best way to prove it is to do as Hendrickson did . . . TRY IT! Send for the booklet "Bigger Yardage Through Air Power"; and for detailed specifications.

**CLARK
EQUIPMENT**

CLARK EQUIPMENT COMPANY
Construction Machinery Div.

380 Second Street
Benton Harbor, Michigan 24

Please send the booklet "Bigger
Yardage Through Air Power" and

specifications of MICHIGAN Series "24".

Name _____
Firm _____
Address _____
City _____



TYPICAL SCENE at a session of the American Arbitration Association. Both parties agree on a panel of arbitrators who serve without pay of any kind. Meetings are informal with an air of "let's

talk this over." Decisions, which are upheld by both state and federal law, are handed down within 30 days. Cost is considerably lower than regular courts.

—Photos by Dan Nilva

How to Avoid a Lawsuit

An Easy Way to Settle Disputes Out of Court

REGARDLESS OF WHERE you live, whatever your occupation may be, you can avail yourself of a swift, inexpensive but competent means of settling almost any kind of a dispute and never go near a court room. You can enjoy a private hearing of your case with no worry about outside publicity.

You can help pick your own men to hear your case—men who are probably in the same profession you are. You can pick your own time, and usually the place, for your case to be heard. And once the hearing is completed, you will get a decision that both federal and state laws will uphold, and you'll get it within 30 days, but more often in a week. You can do all this for a fraction of what it would cost you to take your case to a regular court.

It's all available through the American Arbitration Association, a nation-wide organization, which is devoted solely to the advancement of the knowledge and use of voluntary arbitration. The AAA is non-profit, privately organized and financed, non-partisan and non-political.

For such services the Association charges 1½% of the amount in dispute in small cases, down to 1/10 of 1% in large settlements. Labor cases cost a flat fee of \$25 per hearing.

The smallest judgment ever awarded by the arbitrators working through the AAA was \$1.47. The largest was the staggering sum of \$4,000,000.

Voluntary arbitration is not a new idea, but one that largely through the efforts of the AAA has recently attained national prominence and promises to



ARBITRATORS such as these can be one to three persons. The AAA has a list of 13,000 names of individuals, experts in trades and professions, who are available to serve as arbitrators.

ease the burden of regular courts of law. The AAA recently celebrated its 28th birthday. Early progress was slowed primarily because of lack of understanding by the public and lawyers. Lawyers regarded arbitration as a form of competition, but today most lawyers will readily participate in voluntary arbitration of some form.

Just to give you an idea of the wide scope of operations of this organization, the AAA can make available a list of more than 13,000 arbitrators, all experts in various trades and professions, located in some 1600 cities. These arbitrators contribute their services without pay of any kind. When a person receives an invitation to serve as an arbitrator, he regards it as an honor and privilege to help his fellow man. As one arbitrator put it: "Who knows, we might be sitting on the other side of the table some day." Actually some of the arbitrators have already been on the other side of the table.

Just to see how voluntary arbitration works, CM&E



"No Equipment Failure...
No Loss of Time...
IN FIVE YEARS!"

"Haul 15 Tons 136 Miles Daily
Without a Gas-Up Stop"

2 Years Old!...16,280 Hours!...No Repairs!
...Oil Consumption Unchanged!

Construction men report on equipment using Cities Service gasoline, oils, greases!

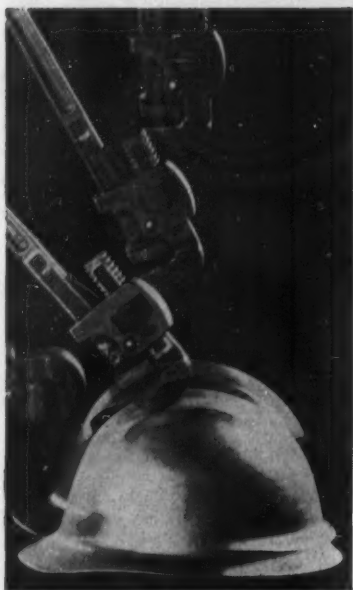
Above are excerpts of actual reports received from several different types of construction operations. They have been placed together on one page because they demonstrate very clearly that testimonials of unexcelled performance are the *usual* rather than the *unusual* when using Cities Service gasoline, oils, and greases. If there were room, many more could be added.

But no matter how many were added, they'd still tell the same story . . . a story of longer engine life, longer chassis life, fewer repairs, and far greater mileage and economy using the Cities Service line of highest quality petroleum products.

Whether you employ diesels or standard equipment . . . whether you use bulldozers, cranes, shovels, tractors, or heavy dump trucks, you'll find there's a Cities Service lubricant for every lubricating point on every piece of motorized equipment. Our job has been to make these lubricants . . . your job will prove they're better.

When you do business with Cities Service, it means you can buy everything from one source, save time in buying, and add dollars to your profit column. Try Cities Service one-source buying. Call your nearest Cities Service office or write Cities Service Oil Company, Sixty Wall Tower, New York 5, New York.





CAUGHT IN THE ACT OF SAVING A LIFE!

High speed photographs of a 3-lb. pipe wrench dropped from 14 ft. prove that Bullard's exclusive ribbed crown construction gives an added margin of safety, and exceeds standard 40 foot pound drop tests.

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"Shorty"
cap



Flared brim protects ears and neck, but does not interfere with carrying or working in close quarters.



"ROUGH-
NECK"
hat

Weights only 12 ounces. Universal headband can be adjusted to any standard size in two minutes.

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FREE—
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AVOID LAWSUITS

Continued from page 106

attended a couple of arbitration sessions at the invitation of AAA in cases involving disputes among contractors.

In the first case, a general contractor was seeking damages from a subcontractor, who, it was claimed, had caused a general work stoppage by his failure to finish his subcontract on time. The general contractor had dismissed the subcontractor from the job before his contract had been completed. The arbitrators in this case were people who really knew the contracting business, as all three were active in some form of construction. Both sides had legal representatives. The session was lively but with no display of temper. All complaints and alleged violations were aired, and when it was all over the arbitrators awarded damages to the general contractor in the amount of \$2,500. It was settled "out of court," with no publicity, and the hearing was completed in just two days' time.

The second case involved a dispute arising over 30 alleged violations on the part of a contractor building a new private home. This case was interesting because only two months had elapsed between the time the original complaints started and the settlement was made by the common-sense board of arbitrators. The arbitrators even journeyed out to the home in question to make sure the contractor fulfilled the promises he had agreed upon during the hearing.

The arbitrators of this case were a bank president, the head of a real estate agency, and an architect. The hearing lasted only one day, and the differences were settled to the satisfaction of all parties. Every week in the 13 offices of the AAA, similar disputes, big and little, are being heard and settled. The AAA will handle them all.

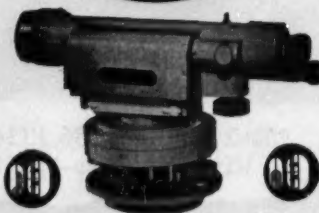
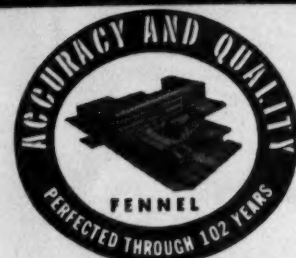
How the AAA Will Work With You

Now, what do you do if you are involved in a dispute and would like the AAA to handle it for you? First, you get your adversary to agree to let AAA handle it. Then write a joint letter to the Association stating your differences and requesting arbitration. The address is: American Arbitration Association, 9 Rockefeller Plaza, New York 20, N. Y.

In a few days both you and your adversary will receive a list of several prominent citizens in or

Surveying experts favor

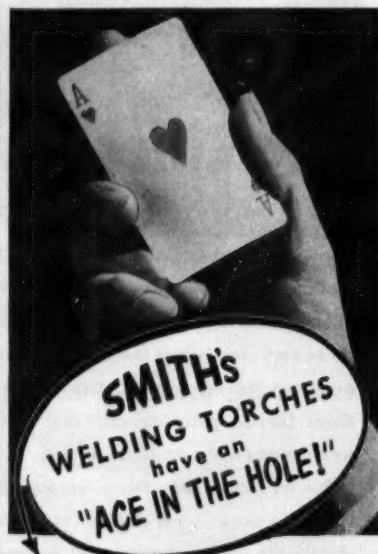
FENNEL
INSTRUMENTS



"NITAC" — World's only level with split bubble, erect image. One of many super-fine levels, transits, theodolites, made by Fennel's old-world craftsmen. Performance - proved in 58 countries. Send for particulars, prices.

FENNEL INSTRUMENT CORP. OF AMERICA

11-27 44th Rd., Long Island City, N. Y.
Dealers in principal cities



The tips *swivel* after the flame is lit! Look what that means: You can change the working angle of your torch in a split second without any loss of time. No more wasting time shutting off the gas, looking for wrenches, lighting up again.

Ask us about it — drop us a card.

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No Other Front End Loader Combines All These Pettibone SPEEDALL Features

Reach, height, down-pressure, bite . . . add smooth torque converter power, balanced-designed frame, fast bucket ascent and descent, quick dumping, big tires all around and *power*. Man, what a front end loader! That's what you, too, will say when you get behind the Pettibone Speedall wheel. Naturally, you can expect the best performance from the *first front end loader to use torque converter power!* It's a husky loader, designed for tough jobs hour in and hour out. Speedall's performance will amaze you. That's why the full details are worth studying. Ask for them today.

By the Manufacturer of Over 70 Material Handling Products!



Over 300 models and sizes of over 70 construction equipment and material handling products made by the Pettibone Companies are shown in this 44-page booklet. It's free!



★ Torque Converter Is Standard!

PETTIBONE SPEEDALL Front End LOADERS

Another Member of the Labor-Saving "Speedy" Material Handling Family!

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It will pay you to find out
the operating facts about

DAVEY ROTARY DRILLS

Drilling blast hole. ▶



Controls are grouped for operator's convenience.

for construction jobs...coal work...quarrying
shot holes...blast holes...core drilling...structure testing
water well drilling...oil exploration

Here, at last, is the new line of rotary drills that operators have always wanted and needed.

Available in several "air blast" or "mud pump" models to meet individual requirements, Daveys drill faster and more economically than previously available units. For example, rated capacity of

Model M-8A (as illustrated) is 5½ inch holes to a depth of 300 ft. with air and 7½ inch holes to 2,000 ft. with mud. Suitable for mounting on any make of truck, Davey Rotary Drills may be driven from the truck engine by a power take-off or by a separate gasoline or diesel engine.

AA-200

DAVEY

*pioneers of
air-cooled air*

Write today for Full Details!

DAVEY COMPRESSOR CO.
KENT, OHIO

AVOID LAWSUITS . . .

Continued from page 108

near your home town who are available as arbitrators. Both of you indicate your preference and mail the list back to the Association. In a week or two you will be notified of the date and place of your hearing. The arbitrators will be persons you have indicated by mutual preference. The hearing will be informal, with no stenographer, unless requested, or court protocol. The AAA will probably have a clerk to handle technical proceedings.

Before your hearing begins, you and your adversary will probably be asked to sign a Submission Agreement which reads: "We, the undersigned, hereby agree to submit to arbitration under the commercial rules of the American Arbitration Association a controversy involving..... (nature of complaint). We agree that controversy be submitted to three arbitrators selected from the panels of arbitrators of the AAA. We further agree that we will faithfully observe the agreement and the rules, and that we will abide by and perform any award, and that a judgment of any court having jurisdiction may be entered upon the award."

Include in Contracts

That's one way to do it, but not necessarily the best way, according to AAA. They recommend that a provision for arbitration of possible disputes be included in contracts when written. Such a clause might read: "Any controversy or claim arising out of or relating to this contract, or any breach thereof, shall be settled in accordance with the rules of the AAA, and judgment upon the award may be entered in any court having jurisdiction thereof."

Such a clause serves a double purpose. It provides a sure way to resolve controversies and creates an atmosphere of understanding right at the beginning, often making it possible to settle differences without resorting to arbitration at all.

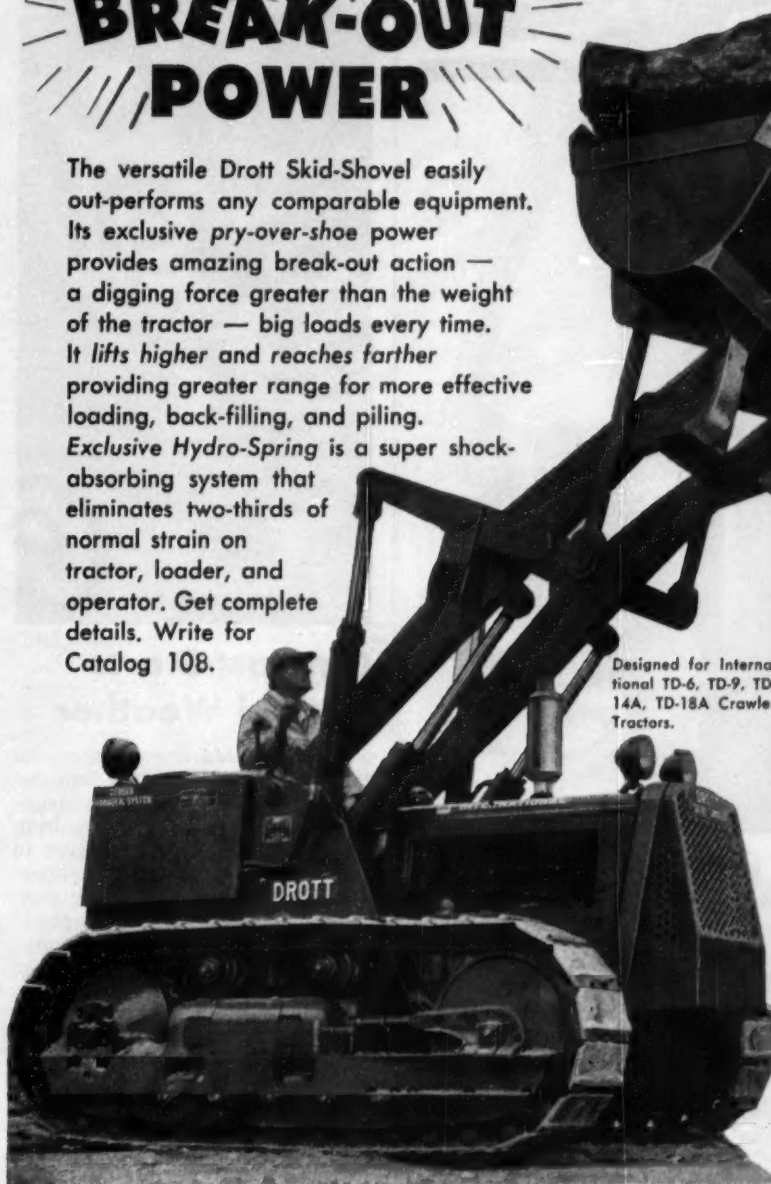
Summed up, the American Arbitration Association is a mighty handy and economical means whereby when two parties disagree they can meet informally and "talk it over" and have the services of one or three arbitrators, whom they have helped select, and receive an unbiased decision in a matter of days, not years.

TERRIFIC

BREAK-OUT POWER

The versatile Drott Skid-Shovel easily out-performs any comparable equipment. Its exclusive pry-over-shoe power provides amazing break-out action — a digging force greater than the weight of the tractor — big loads every time. It lifts higher and reaches farther providing greater range for more effective loading, back-filling, and piling. Exclusive Hydro-Spring is a super shock-absorbing system that eliminates two-thirds of normal strain on tractor, loader, and operator. Get complete details. Write for Catalog 108.

Designed for International TD-6, TD-9, TD-14A, TD-18A Crawler Tractors.



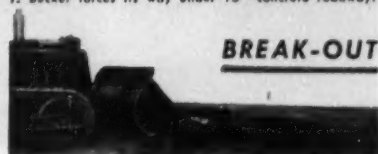
Exclusive "PRY-OVER-SHOE" Action

PENETRATION



1. Bucket forces its way under 10" concrete roadway.

BREAK-OUT



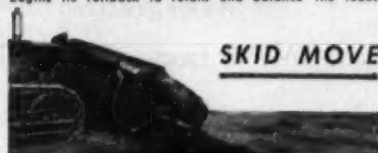
2. Tremendous pry-over-shoe power snaps off 4500 lb. chunk.

ROLL-BACK



3. The powerful TD-9 Int. tractor continues to move forward, forcing the big slab well up as the bucket begins its rollback to retain and balance the load.

SKID MOVE



4. Bucket rolled back 42°, holds slab in close, transports on skid shoes.

LEVEL LIFT

5. Exclusive parallelogram arrangement maintains absolute level bucket throughout the raise to a loading height of 10'8".

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MANUFACTURING CORP.
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FIRST in earthmoving equipment—chooses . . .



Research Laboratories, Peoria, Illinois



PUNCH-LOK

FIRST IN HOSE CLAMPS

- ☆ no snag
- ☆ everlasting
- ☆ fast
- ☆ no leak

Stocked by your near-by Punch-Lok distributor

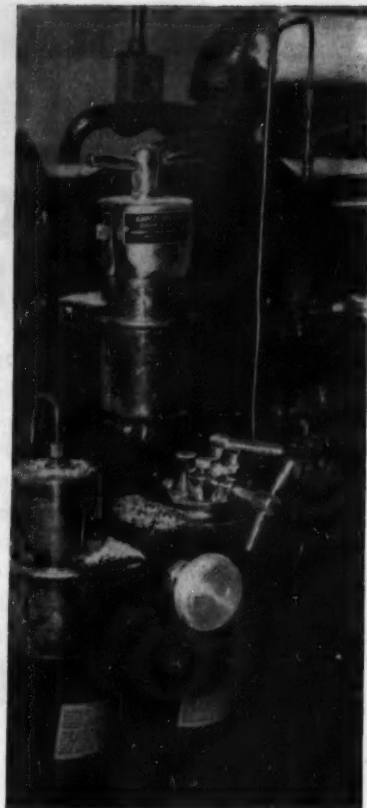
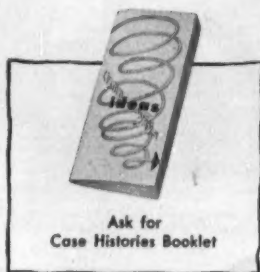


"The Sign
of a
Good
Hose Clamp"

5295

PUNCH-LOK
Company

Dept. F, 321 North Justine Street, Chicago 7, Illinois



Get Fast Starts In Cold Weather

STARTING cold diesel engines no longer needs to be a time-consuming, battery-wasting, temper-fraying job. A new starting aid has been developed to give fast starts to cold-soaked engines at temperatures down to 40 deg below zero.

The Ampco-Sinclair engine starter is, briefly, a device that automatically injects into the air-intake system the right amount of fast-igniting starting fluid at the right rate to insure normal fuel firing. It works, too. CM&E saw an International UD-14A diesel (which, along with its fuel and lube oil, had been held at -20 deg for 24 hr) start in a matter of seconds. The start was made directly on the diesel cycle, without recourse to the engine's built-in gasoline starting cycle.

Several important features are claimed for the Ampco-Sinclair unit:

It is adaptable to all diesel and gasoline engines up to 1,000-cu in. displacement. Simply turning a calibrated pressure-relief valve adjusts the starter for use with various engine sizes and cycles.

The starter's automatic metering

device prevents harmful detonation. At the same time, it eliminates operator guesswork, so he can get a fast start even if he is inexperienced. All controls are large enough for manipulation with gloved hands.

For safety, the unit is loaded with a sealed can of starting fluid (which it punctures within a closed chamber) to eliminate pouring. The entire circuit is closed, so there are no fumes or fire hazards.

The starter uses an aerosol principle as opposed to solid starting fluid injection. It also gives a diminishing fluid/air flow rate after starting, to sustain combustion.

The new starting aid was developed by Sinclair Research Laboratories and is being made by Automotive & Marine Products Corp. Price for the unit is about \$60. A 10-oz can of starting fluid—enough for 20 to 60 starts—costs \$1.—**Sinclair Refining Co., 600 Fifth Ave., New York City.**

Moles to Honor Jansen and Walsh

THE MOLES AWARDS for Outstanding Achievement in Construction will be given for 1955 to Carl B. Jansen and Thomas J. Walsh. Considered contracting's highest honor, the awards are presented annually by The Moles, a New York association of leaders in the construction industry.

Jansen, president of Pittsburgh's Dravo Corporation, joined that firm as field engineer in 1922 after graduation from Union College. He was superintendent in charge of such varied projects as the substructure for the East Bay Crossing of San Francisco's Bay Bridge and the Market St. Subway in Philadelphia. Long active in contractor and civic affairs. Jansen is a past chairman of AGC's labor committee.

Walsh, chairman of the board of New York's Walsh Construction Co., started working for that outfit as a pit man under a steam shovel during college vacation shortly after the turn of the century. He became president in 1916 and board chairman in 1946. Major Walsh jobs include New York's Queens-Midtown Tunnel, United Nations Building, Fairless Steel Works, Clark Hill Dam, Pit River Tunnel No. 4, and graving docks at New York Naval Shipyard.

WELLMAN STONE GRAB



*Moves
the "big ones"
faster!*

THE Wellman Stone Grab thrives on rugged work. This tough grab is built with three jaws for gripping big, irregular-shaped stones with speed and safety. Develops tremendous closing force in its jaws. Welded construction and alloy steels give great strength with minimum dead weight. Available in 5, 10 and 15 ton sizes.

THE WELLMAN ENGINEERING CO.

CLEVELAND 4, OHIO

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for free
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The Wellman Engineering Company
7028 Central Avenue, Cleveland 4, Ohio

Please send me a free copy of bulletin on:

- | | |
|--|--------------------------------------|
| <input type="checkbox"/> Clamshell Buckets | <input type="checkbox"/> Stone Grabs |
| <input type="checkbox"/> Dragline Buckets | <input type="checkbox"/> Log Grabs |

Your Name _____

Address _____

City _____ State _____

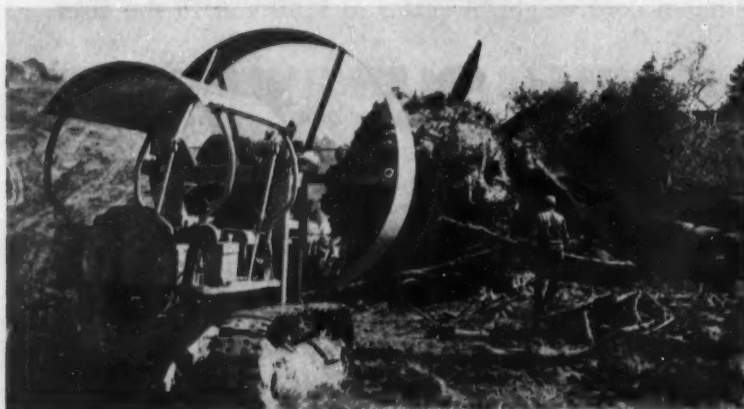
Position _____ Company _____



Tractor Knives Rip Roots...



...Stinger Arm Topples Tree...



...and Blower Fans Fire

TREES UP TO 6 ft in diameter can now be felled in a matter of minutes with a team of two new tractor attachments. A hydraulic ripper mounted on the rear of a Caterpillar D8 first makes several passes around the trunk cutting large roots. Then, a cable controlled stinger arm, mounted on the dozer arm of the tractor, pushes the tree over, raising the roots above ground.

Forty thousand trees on a construction site at Millbrae, Calif. were toppled this way. Peterson Tractor & Equipment Co., Caterpillar distributor in San Leandro, Calif., and American Tractor & Equipment Corp., Oakland, Calif., developed the equipment to eliminate the difficult and costly job of digging out the roots and stumps.

The ripper consists of two special root-cutting knives. Each knife is made in one piece and weighs 860 lb. It is hardfaced on one side of the cutting edge so that it is self-sharpening. A slightly hooked shearing edge 44 in. long extends 36 in. into the ground.

Ripper Severs Roots

For larger trees, the Cat D8 Tractor makes passes with the cutting knife close to the trunk on four sides. This cuts or snaps off the large roots that spread out beneath the tree. For smaller trees, 1 ft or less in dia, two passes are sufficient to sever the roots. The hydraulic ripper enables the operator to utilize the full weight of the tractor.

The second part of the team then takes over. The stinger contacts the tree 12 ft high and 9 ft 14 in. ahead of the dozer blade. One good thrust pushes the tree over.

Roots left in the ground are later rooted out and burned. The fallen trees are bulldozed into flat areas where they are cut up into shorter lengths and burned.

Another piece of special equipment takes over in the burning process. To speed up operations the trees are ignited while they are still green, and the flames are fanned by a special blower devised by Peterson Tractor & Equipment Co.

A Caterpillar D4 tractor is the mounting for this wind machine. Equipped with a Blevans Wind Machine propeller, the D4 really speeds up burning. The unit consists of a four bladed wooden propeller 7 ft 4 in. in diameter driven by a Trackson Loader drive with pulleys and four V-belts.



EXCEPTIONALLY SMOOTH accurate control —plus ready mobility—make the 15-B and 22-B Transit Cranes real producers on construction jobs. Here are some of the control advantages that pay off in big output.

BOOM CONTROL IS ACCURATE, RELIABLE with fully independent power boom hoist and power controlled load lowering on the main hoist line.

BOOMS ARE EASY TO SPOT because friction swing brake, in addition to regular swing lock, holds boom exactly where operator wants it.

QUICK, EXACT CONTROL RESPONSES are delivered by direct-connected mechanical

controls. Elimination of all excess weight and excellent machine balance mean fast, smooth swing.

SPECIAL 16-PART SUSPENSION provides slower boom hoisting or lowering for even greater precision in setting steel, etc.

See your Bucyrus-Erie distributor now for full information on the 15-ton capacity 15-B Transit Crane, convertible to 1/2-yard excavator service; and the 22-B Transit Crane, outstanding in the 25-ton capacity, 3/4-yard class.

68E54C

**BUCYRUS
ERIE**

South Milwaukee, Wisconsin



SELF-PROPELLED DRILL RIG averages up to 1,300 ft of blast holes a day. Four LeRoi drills are operated from a one-man control panel.

Air is supplied by two Ingersoll-Rand Gyro-Flo 600-cfm compressors mounted on each side of a Caterpillar D8 tractor.

Unique Drill Rig Rides on Tractor




PIPE FRAME, mounted on dozer arms of tractor, can be plumbed up by pivoting it on the middle cross-bar. One man controls drills, and one operates the tractor. Air jet cleans blast holes.

BY MOUNTING TWO COMPRESSORS on the back of a Caterpillar D8 tractor and four rock drills on the front, a contractor has developed a self-propelled and self-contained rig that not only out-performs wagon drills but also does it more cheaply. Baltimore contractor C. J. Langenfelter & Son, Inc. is working two of his unique machines on Philadelphia's Schuylkill Expressway, and both units are drilling up to 1,300 ft of blast holes a day. The second rig was made only after the first had definitely proved itself in the field.

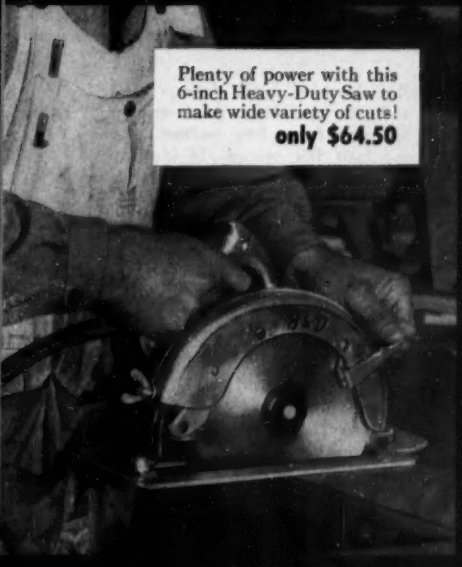
The drills are standard LeRoi D14's that ride on wagon-drill masts. A supporting pipe frame is mounted on the dozer arms of a Caterpillar D8 tractor. Air is supplied by two Ingersoll-Rand Gyro-Flo 600-cfm compressors set on outriggers.

All four drills are operated by one man from a LeRoi control panel cantilevered out from the top of the pipe frame. After a line of holes is drilled, the entire frame is lifted from the ground by the dozer arms, the tractor moves to the next position, lowers the frame, and the drills are ready to start again. If


(Continued on page 118)




9-inch Heavy-Duty B&D
Saw. Most power-packed
for even the toughest jobs.
only \$114.50



Plenty of power with this
6-inch Heavy-Duty Saw will do
make wide variety of cuts!
only \$64.50



7-inch Heavy-Duty Saw
has adequate blade depth
for all general-purpose
sawing.
only \$84.50



This Black & Decker 8-inch
Heavy-Duty Saw will do
almost every sawing job on
big construction projects.
only \$96.50

Make light work of heavy construction sawing

What do you want in a portable electric saw? Power? Durability? Versatility? Fast adjustment? Safety? You get 'em all in Black & Decker Saws! B&D-built motors pack these saws with power. Saws are sturdily constructed for continuous, trouble-free, heavy-duty operation. They make all types of cuts in almost all building ma-

terials. Adjust quickly and easily. And they have all of the latest safety features. Try 'em yourself. See your Black & Decker distributor for demonstration. Also write for full information to: THE BLACK & DECKER MFG. CO., Dept. 2611, Towson 4, Maryland.



For nearest distributor,
see "Tool-Electric."

LEADING DISTRIBUTORS EVERYWHERE SELL



Black & Decker

PORTABLE ELECTRIC TOOLS

NEW
BLADE DEVELOPMENT
CUTS COSTS!

SKIL TWO-WAY Saw Blade



REVERSIBLE! Unique tooth design cuts either way, gives twice the cutting edges! May be reversed again and again!



SELF-HONING! Trailing tooth-edges are honed while leading edges cut. Always a sharp cutting edge ready for instant use!



DISPOSABLE! Four times longer life! Saves on needless resharpening! Low cost makes disposal practical when worn out!

SKIL
PORTABLE TOOLS

Made only by SKIL Corporation,
formerly SKILSAW, Inc.
1033 Elston Avenue, Chicago 30, Illinois
3401 Dundas Street West, Toronto 9, Ontario
Factory Branches in All Leading Cities

...Lasts four times longer than ordinary blades... yet never needs resharpening!

Here is the first real cost-cutting development yet made in circular saw blades! The new SKIL Two-Way Blade... lets you save *three ways*: (1) Gives you *four times* as many cuts! (2) Eliminates three to four costly resharpenings! (3) Reduces *down-time*!

SKIL Two-Way Blade is top quality throughout: Specially-treated alloy steel, 50% harder than ordinary blades. Precision-ground, uniformly-set teeth of patented design. Special no-glare, rust-resistant finish. Constant diameter for uniform cut-depth. All insure controlled cutting performance under toughest job conditions! Give it an on-the-job test *today*!

SKIL Corporation, Dept. CME-114
5033 Elston Avenue, Chicago 30, Illinois
☐ I would like a demonstration and free trial of the SKIL Two-Way Saw Blade.
☐ Please send me literature on the New SKIL Two-Way Saw Blade.

Name _____
Company _____
Street _____
City _____ Zone _____ State _____

UNIQUE DRILL RIG . . .

Continued from page 116



DRILLER ON control panel platform gives signals to tractor operator as the dozer arms lower the pipe frame into position. The contractor built this second rig identical with the first, except for a wider ramp around the outside of the compressors.

the drills need re-plumbing, an air-powered hydraulic motor mounted on the frame's top cross-bar actuates a piston-type brace that pivots the frame on the middle cross-bar and restores the drills to the proper position.

Only four men are required to handle the rig: one driller at the control panel, two helpers on the ground, and one operator for the tractor and the two compressors.

On the Philadelphia job, holes are drilled 5 ft apart and about 18 ft deep. Bits are Timken carbide. An air jet cleans the holes before they are loaded.

R. Strong is superintendent and J. Burrell is drill foreman for C. J. Langenfelder & Son, Inc.

Famous Last Words...

(By L. H. Scott, Turner Construction Co.)

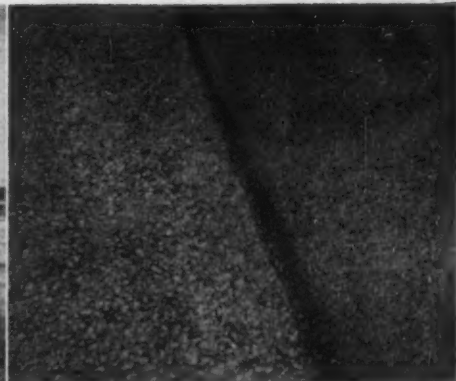


"I GOT GOOD FOOTING!"

(upper left) Laying Hot-mix Texaco Asphaltic Concrete over old rigid pavement on Delaware State Route 18.



(upper right) Close-up showing the two courses of Texaco Asphaltic Concrete used on Delaware resurfacing project.



(lower left) Traffic used the State Highway without interruption while new surface was under construction.



(lower right) Section of completed pavement before shoulders received three applications of Texaco Cutback Asphalt.



Delaware's answer to ...
"What thickness of Asphalt is needed when resurfacing old concrete highways?"

CONTRACTOR:
 Nello L. Teer Co.,
 Durham, N.C.

When an existing highway of the rigid type is to be resurfaced with hot-mix asphaltic concrete, an important question calling for a decision by the engineer concerns the thickness of the new asphalt surface.

Pictured here is a recent resurfacing project of the Delaware State Highway Department, located on its Route 18. The new Texaco Asphaltic Concrete pavement constructed on this highway was laid in two courses having a combined thickness of $3\frac{3}{4}$ inches.

Sound engineering practice dictates that when a new asphalt wearing surface is laid over an old rigid pavement, it should have a minimum thickness after compaction of $2\frac{1}{2}$ inches to deliver lasting service with lowest upkeep. The thickness to be specified for a particular project must be based on an accurate knowledge of the volume and

weight of traffic to be served.

Where necessary, undersealing of the old pavement with asphalt before resurfacing will greatly enhance the performance of the new asphalt wearing surface.

Whatever your street, highway or airport paving problem, there is a Texaco Asphalt Cement, Cutback Asphalt or Slow-curing Asphaltic Oil exactly suited to your needs. These products are used in the construction of Plant-mixed and Penetration Macadam pavements for heavy traffic; low-cost, intermediate-type asphalt surfaces for secondary roads and streets; as well as inexpensive surface-treatments. Helpful information regarding materials and methods recommended for all types of Texaco asphalt construction is provided in two free booklets, which you can obtain without obligation by writing our nearest office.



THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17
 Boston 16 • Chicago 4 • Denver 1 • Houston 1 • Jackson:ille 2 • Minneapolis 3 • Philadelphia 2 • Richmond 19

TEXACO ASPHALT

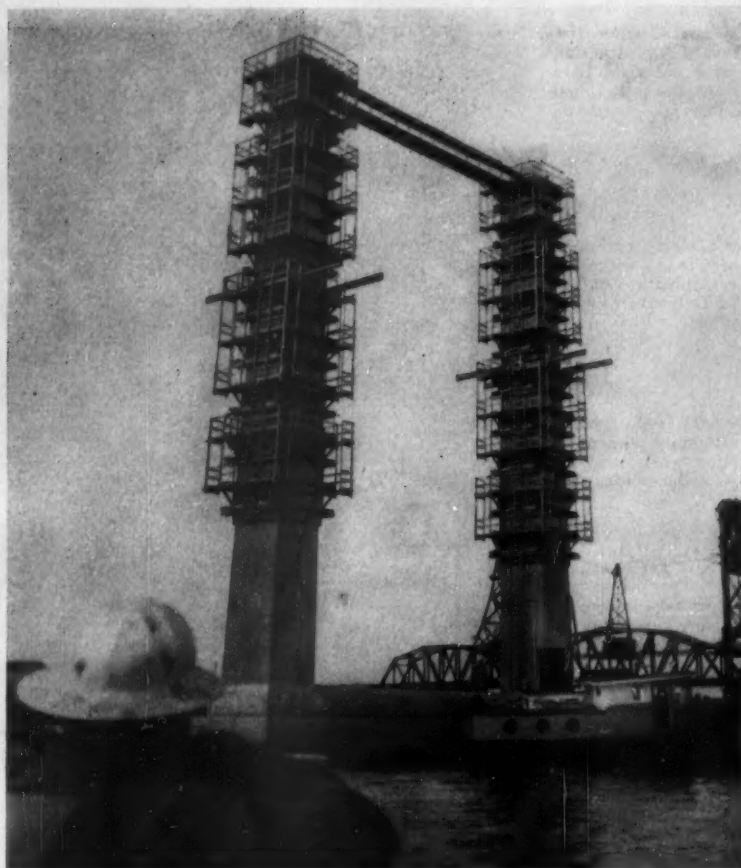
Pier Form Is Safe, Strong, And Simple

"A MAN DOES a lot more work when he feels safe," says superintendent Roy Switzer of the Dravo Corp. And a quick look at his Newark Bay bridge job in New Jersey shows how this principle can be put to work.

Among the job's most outstanding features are the forms for the shafts of 16 high concrete piers, all of which are over water. Experienced dockbuilders say it is the best bridge form they have ever seen in the New York area. It is sturdy, easy to assemble, simple to strip, and most important—safe to work on. The form is without internal tie rods, easily mounts scaffolds, needs few guy wires, and even helps keep the trades separated. It is a heavy form, but there are plenty of big floating rigs available on the job to do the lifting.

The twin-shaft piers rise as high as 120 ft and range up to 10x11 ft at the base. The inside face of each shaft is plumb and the other three are battered.

All forms are made and assembled into box sections in Dravo's yard adjacent to the Bay. At the site, boxes are set on top of each other to make 40-ft lifts. Panels 16 and 24 ft high are made of 3-in.

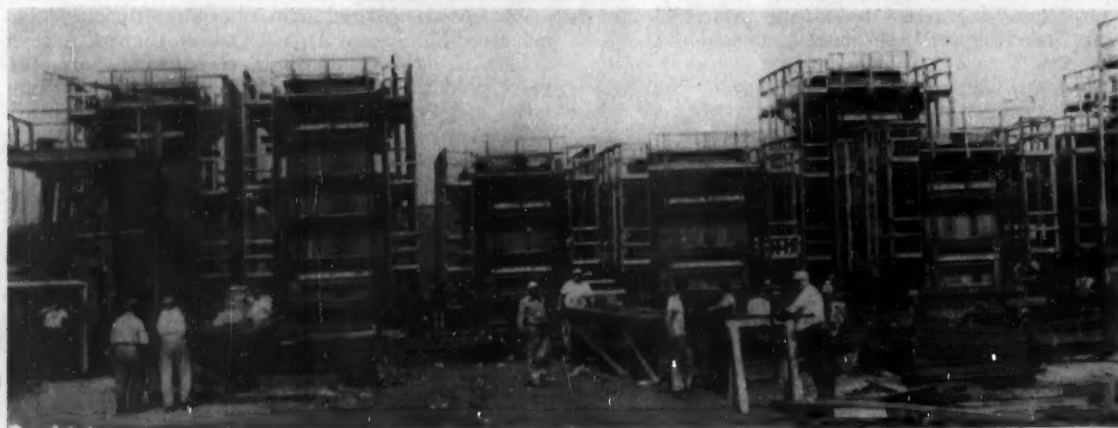


TWIN-SHAFT PIERS more than 100 ft high are ready for third and final pour. Steel-collared forms mount network of scaffolds and ladders to provide maximum safety for workers. Top-lift forms are guyed to previously poured lift and also to steel outriggers.

t. & g. lumber. (Joints between the 8-in. wide strips produce the required ornamental lines on the faces of the concrete shaft.) Panels are backed by horizontal 12-in. I-beams 4 ft apart. The inner flanges

of the I-beams are bolted to the t. & g. strips, while the outer flanges are tied together with two ¾-in. vertical rods.

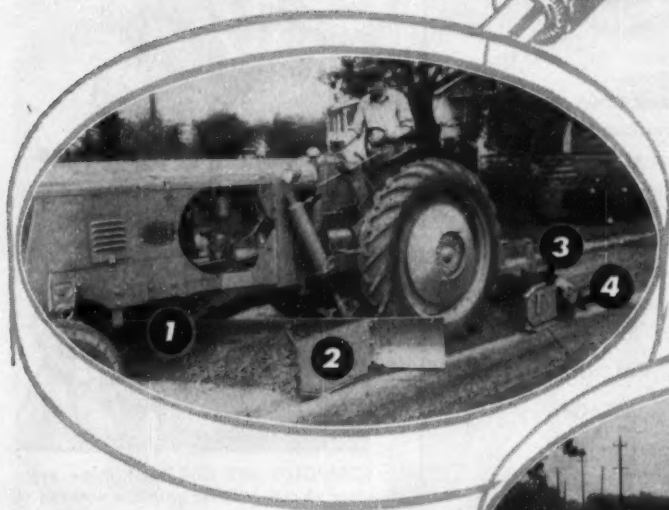
Four panels are easily assembled into a sturdy box section by 1-in.



BOX-LIKE FORM SECTIONS 16 and 24 ft high are assembled in contractor's yard complete with scaffolds and ladders. Panels are

made of 3-in. t. & g. lumber backed by 12-in. horizontal I-beams 4 ft apart. No internal tie rods are required.

HOW HUBER SOLVES Two Special Problems



SMOOTH BERMS IN ONE PASS

Hydraulically controlled blade (1) pulls in berm material to edge of pavement where gathering blade (2) carries it until needed to fill low spots. Rear wheel compresses fill material. Hydraulically controlled berm leveler (3) removes and feathers-out excess material. Cleaner blade (4) sweeps pavement clean.

CLEANING UNDER GUARD RAILS

Huber Side Dozer attachment enables Maintainer to scalp berms and shoulders under any guard rail 6" or more off ground. Hydraulic action pushes 48"x6" blade to remove sod and gravel, formerly a laborious hand operation. Side dozer has 72" reach.



THESE ARE ONLY TWO OF THE JOBS

a versatile Huber Maintainer can do. Other attachments convert it to a bulldozer, lift loader, highway mower, snow plow, broom, road planer or patch roller. Its 42½ horsepower puts a heavy push behind its 9-foot moldboard, and its 6,000-pound weight, ability to travel at pick-up truck speeds and to turn and work in close quarters make it a favorite tool for many classes of work.

NOTE TO CONTRACTORS

Talk with the political subdivisions in your area about handling their berm leveling and guard rail cleaning problems on a contract basis.

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.
Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers



WHEN WILL **SCHRAMM** BUILD A ROTARY COMPRESSOR?

Schramm might build a rotary compressor when the rotary compressor can be built that will perform better than the Schramm UNISTAGE compressors they are now building.

Schramm might consider a rotary compressor if one could be built that would:

Have as low maintenance as the Schramm UNISTAGE;

Use as little fuel as the Schramm UNISTAGE

Be as easy to service as the Schramm UNISTAGE

Have as simple controls as the Schramm UNISTAGE

So far — none have been built that can equal the economy and performance of the Schramm UNISTAGE.

Records of Schramm users have proved this!

SCHRAMM, INC.

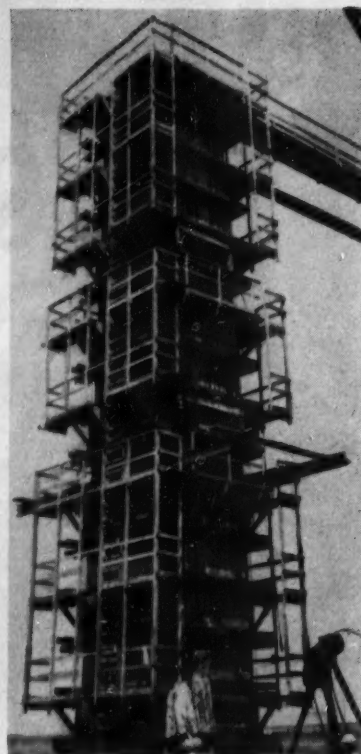
WEST CHESTER

PENNSYLVANIA

SCHRAMMAIR YOUR JOBS

SIMPLE PIER FORM . . .

Continued from page 120



SCAFFOLDS ARE BUILT just below every other I-beam collar to permit a workman to reach all external tie rods without difficulty.

tie rods placed just outside the form and extending between the I-beams of opposite panels. The rods pass through holes in the I-beams and are bolted at each end. When the bolts are tightened, the I-beams act as collars.

Sturdy scaffolds with double railings are permanently attached to two opposite panels just below every other I-beam to allow workmen to reach all tie-rod bolts on two collars. At the top of each box section, the scaffold is built completely around to provide a safe area for workmen as they set one box on another. Ladders are also built in on two sides.

Fully assembled boxes are carried out to the piers on barges and set in place with floating cranes. Abutting boxes are bolted together through horizontal angles attached to the tops and bottoms of each panel.

This type form without internal tie rods eliminates overcrowding of the work area by allowing dock builders to complete most of their work before the steel reinforcing workers move in.

The weight and stability of the

Keeps Machines Running Longer



MARQUETTE No. 550 HARD ROD

This tough-hard, wear-resistant rod adds as much as 5 times more life to built-up parts! Designed to fight wear where earth and sand abrasion are severest . . . and it's easy to apply. Smooth durable deposit, free from cracks and porosity, keeps machines on the job!

For high-tensile strength on all repair and maintenance jobs use Marquette No. 130 Red-Rod, unequalled for easy operation in all positions.

MARQUETTE

MANUFACTURING CO., INC.

307 E. Hennepin, Dept. CM, Minneapolis 14, Minn.



ONE MAN AND A **Pit-Bull** CAN DO HUNDREDS OF DIFFERENT JOBS...AT LESS COST

Save on equipment costs and better utilize your manpower. Invest in the Davis **Pit-Bull**...a top-quality, hydraulically operated unit for Ford or Ferguson tractors that has eleven different attachments. You can keep the **Pit-Bull** and its operator busy all the time. Look at the jobs it will perform. Your initial investment is far less...and the cost of additional attachments is only a fraction of machines that do comparable work.

The **Pit-Bull** actually turns your Ford or Ferguson tractor into a powerful machine. A syncro-mesh transmission gives four speeds each direction, *plus* extra power for digging and loading. Notice how the operator sits high...out of the dirt...with perfect vision. Controls, steering and seating are reversed so he has absolute finger-tip control over the **Pit-Bull** and the tractor. Let a demonstration...and a look at the price...convince you!

LOOK AT THE ATTACHMENTS THAT FIT THE **Pit-Bull**

- | | |
|-------------------------------------|------------------|
| 1. LOADER WITH OR WITHOUT SCARIFIER | 6. LIFT FORK |
| 2. BACK-HOE | 7. ROLLER |
| 3. TRENCHER | 8. POST AUGER |
| 4. ROTARY BROOM | 9. DOZER |
| 5. SWINGING CRANE | 10. HAMMER |
| | 11. ROTARY MOWER |

Write for this brochure on the Davis Pit-Bull and ask for the name of your nearest dealer
He will arrange a demonstration for you

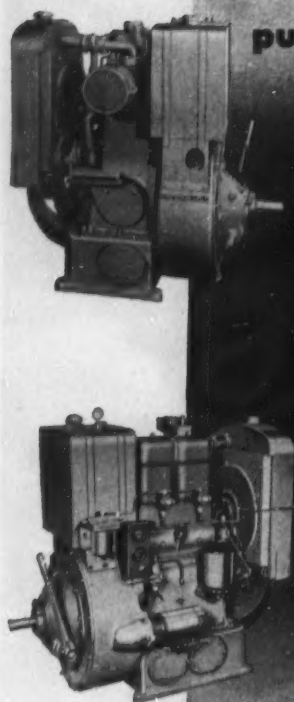


MID-WESTERN INDUSTRIES, INC.
1009 SOUTH WEST STREET Dept. M WICHITA, KANSAS

The Davis Pit-Bull Is Manufactured by the Makers of
the Davis Loader, America's Quality Front-End Tractor Loader!




PB-6



put **EFFICIENCY** to work...

NORDBERG



POWER CHIEF

DIESELS

- longer engine life
- lower operating costs

...for dependable **CONSTRUCTION SERVICE**

In addition to the low initial cost of the 1, 2 and 3-cylinder Nordberg *Power Chief* Diesel engines, the outstanding design and construction of these compact units assures extremely low fuel and lube oil consumption...which has been proved in a wide range of construction power jobs.

And, like all Nordberg Diesels, the *Power Chief* series engines are sturdily built to give years of reliable service with a minimum of maintenance time and expense.

Write for further details on Nordberg *Power Chief* Diesel power units from 10 to 45 hp and Diesel generator units from 6 to 30 kw.

Nordberg Mfg. Co., Milwaukee, Wisconsin

THERE IS A NORDBERG DISTRIBUTOR TO SERVE YOU
IN ALL PRINCIPAL CITIES

NORDBERG

Builders of America's Largest Line of Heavy Duty Diesels



MAIL
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FOR DATA

Nordberg Mfg. Co., Milwaukee, Wis. CM
Please send full details on Nordberg **POWER CHIEF** Diesel Engines.
Name _____
Company _____
Address _____
City _____ Zone _____ State _____

4-454-C

SIMPLE PIER FORM . . .

Continued from page 122

form eliminates the network of guy wires often required for high piers. Generally, the form for a 40-ft lift is stabilized with four simple guys tied down to steel outriggers placed at the top of the previously poured lift.

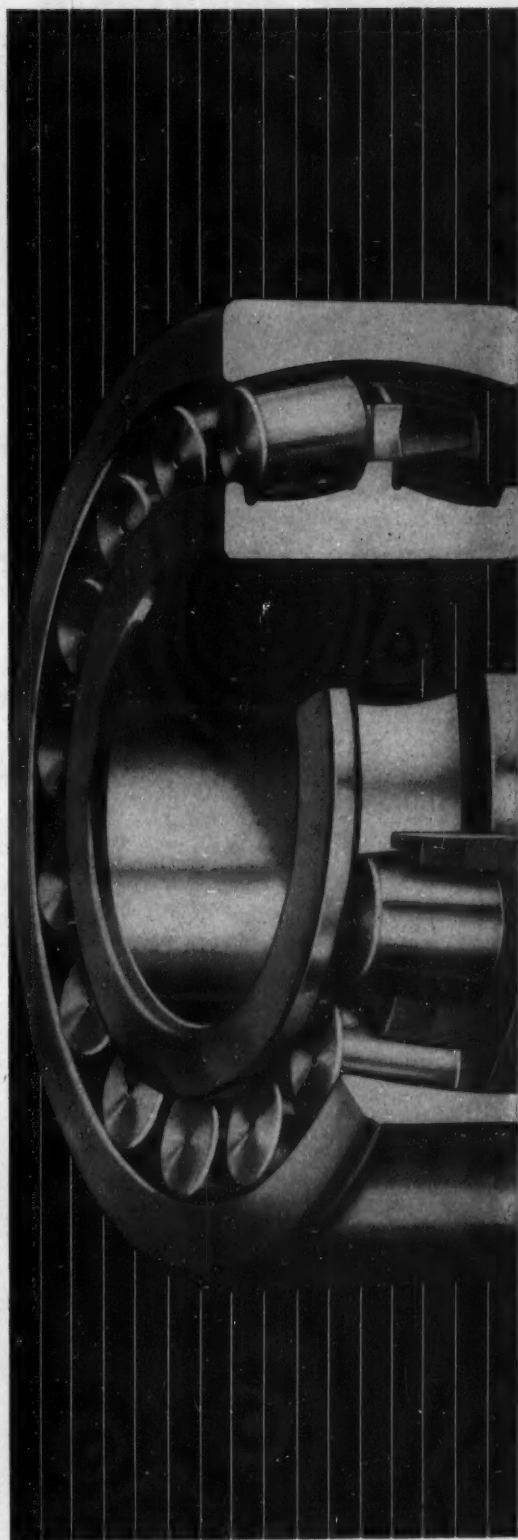
Form stripping is a simple matter of removing the bolts and external tie rods. Each panel is lifted away by a crane, as the others hang from the angles at the base of the higher forms. When all four panels are removed, the box is reassembled on a barge and ready for another pour. Similar tapers on all shafts make it simple to reuse forms. Box sections are adapted to smaller shafts by cutting a piece from the bottom. Switzer expects to get six reuses from his forms on the Newark job, and even then they will be almost completely salvageable.

Dravo is using a somewhat different type form on four big piers that will support the bridge's main cantilever span and its two anchor arms. All of the above safety features are incorporated. However, because I-beam collars are not practical for such large shafts, the contractor is using internal tie rods. The same t. & g. strips are backed by horizontal timber studs and vertical wales. The form is adjusted for reuse by cutting vertical strips from only one of the four side panels. The panel on the one plumb side of the shaft is made extra large to allow the two adjacent panels to be placed at various width settings. A closure panel, which fits between these two side panels, is cut for every reuse.

Both types of forms improve the safety and morale of the workers, and speed construction. Dravo has a \$4,000,000 contract with the New Jersey Turnpike Authority to construct the 20 high piers that will carry the Turnpike's new Hudson County extension over Newark Bay.

Hot Air Better

MOBILE AIR COMPRESSORS supplying hot air directly to rock drills increased the number of feet drilled per shift by 15 to 20% in tests carried out by Atlas-Diesel in the Kiruna iron mines in Sweden. The air heated to 165 deg is believed to improve lubrication and cut down the volume of air required so that smaller compressors can be used.

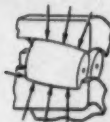


why it pays to specify

TORRINGTON

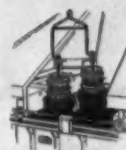
Spherical Roller Bearings

Uniform, close control of precision-ground contact surfaces—for even load distribution and maximum bearing life.



Accurate geometrical conformity between races and rollers—for ultimate load carrying capacity and performance.

Races and rollers heat treated according to the most advanced metallurgical procedures—for maximum durability.



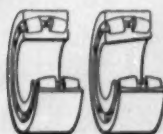
Individual one-piece cage for each path of rollers—assures freedom of operation.

Integral flange on inner race—to give radial stability and positioning for thrust loads—both essential to satisfactory performance.



Self-aligning—for continuous, free-rolling service under shock loads and at sustained speeds.

Unit assembly—for easy, economical handling.



Available from stock with either straight or tapered bore—for shaft or adapter mounting.

These are advantages that give you long, efficient, low-maintenance service in the toughest heavy-duty application. To get maximum value for your bearing dollar, specify TORRINGTON Spherical Roller Bearings.

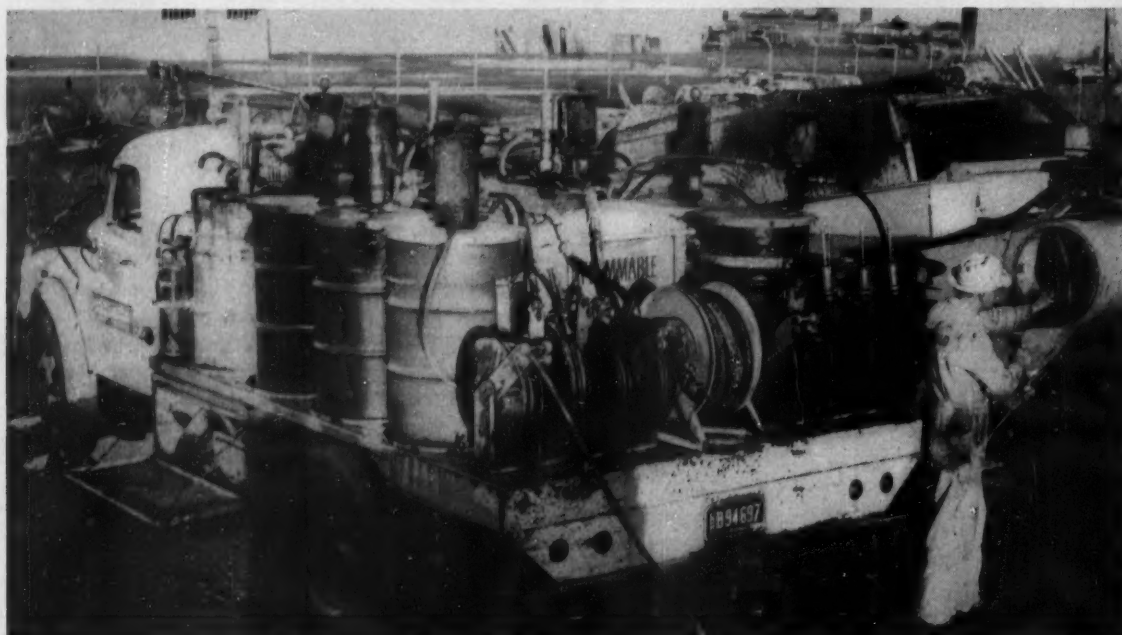
THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.

TORRINGTON SPHERICAL ROLLER BEARINGS

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers



Swirling dust around busy earthmovers means...



...Lubrication must be frequent and thorough.

Lubrication Must Match Rough Service

THESE PICTURES were not taken on the same job, but they illustrate a typical operation and good maintenance practice. The three International TD-24 crawlers pulling scrapers are cutting down a dry hill for Ryan Construction Co., Evansville, Ohio.

The compact and efficient Alemite lube outfit on the 2½-ton Dodge truck was assembled by excavating contractor J. O. Archibald, Redwood City, Calif., who recently battled a forest fire 24 hr a day for two weeks with his scrapers and tractors. Truck carries lube, diesel fuel, water, solvent.

BLAW-KNOX

Bituminous Paver

APPROVED

The approval of the Blaw-Knox Bituminous Paver by the Highway Department of the Commonwealth of Pennsylvania should have real significance to contractors considering the purchase of new asphalt finishing equipment. The State of Pennsylvania is particular about how its roads are laid and the approval of the Blaw-Knox Paver came only after the laying and examination of many miles of road in the Pittsburgh area.

Contractors who plan to buy a new asphalt paver should give serious thought to the savings made possible by wheel operation. The Blaw-Knox Bituminous Paver gives *a better surface at higher speed*. Its mobility cuts relocation time and truck waiting time. Its more simple design *materially* reduces upkeep cost. Don't buy a Bituminous Paver until you have the whole story on the Blaw-Knox.

COMMONWEALTH
OF PENNSYLVANIA
DEPARTMENT
HIGHWAY



*On wheels
it will pave
for less*



BLAW-KNOX COMPANY

Pavement Construction Equipment Div.
1910 State Street, Bundo, New York

Stop whipping yourself with a starter rope...



Take it easy

with an ARMSTRONG BULLDOG Rewind Starter

On the gasoline powered equipment you buy... insist on an Armstrong "Bulldog"

New Armstrong Starters guarantee quicker, easier starting, gas economy. Engage after only 1/4" pull. The rope can't slip, can't get lost because it's always in the starter — rewinds itself automatically. No more rope bruises or tedious rewinding. Just grasp the handle and pull lightly for an instant start. A completely new principle in rewind starters.

Convert the equipment you have to rewind starting

Armstrong Rewind Starters fit all popular makes of gasoline engines. Easy to install. Do it yourself in 20 minutes or less. Packaged with complete instructions and mounting hardware. The Armstrong is low in cost — prices begin at \$8.50.



See your distributor or write...

ARMSTRONG PRODUCTS CO.

8450 N. TEUTONIA AVE.
MILWAUKEE, WISCONSIN



Here, PRIME-MOVERS handled everything!

Three Prime-Movers handled ALL concrete and masonry materials for this seven-story building. These Prime-Movers hauled, spotted, and placed CONCRETE onto pan-forms for upper-floor pours! And then, with quickly interchangeable flatbeds hauled BRICK, TILE and LUMBER direct to the men who used them. Write for complete on-the-job studies covering this and other projects.

THE PRIME-MOVER COMPANY, MUSCATINE, IOWA

**CONCRETE
BRICK
TILE
MORTAR
LUMBER**



SALES AND

★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Baldwin-Lima-Hamilton Corp.: The construction equipment division, announces appointment of R. S. Armstrong & Bros. Co., Albany, Ga. as distributor for the southern portion of that state for Lima shovels, cranes, draglines and pull shovels. The new distributor for the northern portion of Texas is the Fred Berryhill Equipment Co., Inc., of Lubbock, Tex.

Worthington Corp.: Three new distributors will handle this company's construction equipment line, including portable compressors and contractors tools manufactured at the Holyoke Works and truck mixers, pumps and portable mixers produced at the Plainfield Works. Jackson Machinery Co. Inc. of New Orleans will handle sales in all the parishes of Louisiana; Hunter Tractor & Machinery Co., Milwaukee, Wis., will cover territory north to the Illinois state line, to the Michigan state line and West from Lake Michigan to the Minnesota border; Heil Equipment Co. of New York, Inc., Astoria, L. I., will cover sales in Kings, Queens, Richmond, Suffolk, Nassau, Bronx, Westchester, New York, Putnam, Dutchess, Rockland, Ulster, Orange and Sullivan.

Hyster Company: Herd Equipment Co., of Oklahoma City has been named Hyster industrial truck equipment dealer for the entire state of Oklahoma. Branch offices are maintained in Woodward and Tulsa, Okla. The Herd Co. will handle the Hyster lift trucks, mobile cranes and other material-handling equipment.

Dorsey Trailers: Has announced the appointment of Missouri Valley Machinery Co., with Iowa headquarters at Sioux City, as distributors of its line of heavy-duty "low bed" trailers. From Sioux City this distributor will serve 23 counties in Western Iowa, and from its Omaha, Neb., headquarters it will supply 28 counties in Northeastern Nebraska.

The Galion Allsteel Body Co.: Announcement has been made of the appointment of Truck Hoist and Equipment Co., Minneapolis, as Minnesota distributors of the full line of Galion Allsteel bodies, hoists and LOAD-evator hydraulic end leaders.

Detroit Diesel Engine Division, General Motors Corp.: Southern Diesel Sales will now be the new dealer for GM Diesels at Ft. Myers, Fla. The company will be under the sole ownership and management of Roy T. Sorrell, Jr.

Construction Machinery Div., Clark Equipment Co.: The newly formed Long-Talbot Equipment Co., Columbia, S. C., has been appointed to sell and service the Michigan line of excavator cranes and tractor shovels, for the entire state of South Carolina.

Page Engineering Co.: Has named Spreitzer, Inc., Cedar Rapids, the new Iowa distributor for Page automatic dragline buckets, chains and accessories. Dealership will cover the eastern half of Iowa, selling four classes of dragline buckets, light-to heavy-duty, in all sizes from $\frac{3}{4}$ to 3 cu yd.

W. A. Riddell Corp.: Newly appointed distributor for Warco Motor Graders is the Ross, Young, Dilts Co., of Three Bridges, N.J. From this location and through their sales office in Trenton, complete sales and service facilities will be available.

Euclid Div., General Motors Corp.: Announces the appointment of Min-A-Con Equipment Co., Phoenix, as Arizona dealer. The company will represent Euclid in the entire state, except for the counties of Apache and Mohave, and will provide sales, service and parts facilities for the complete line of Euclid earthmoving equipment.

On the Sales Front

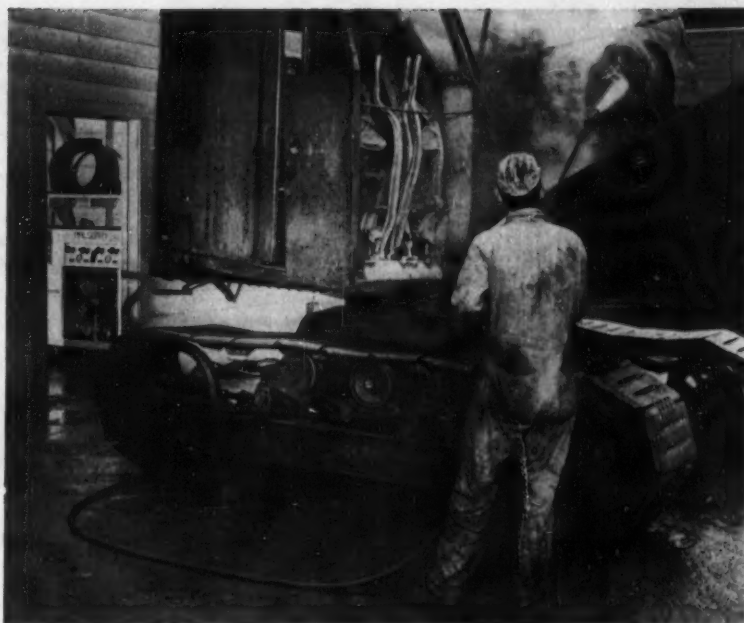
Euclid Division, General Motors Corp.: J. W. Bloomquist has been appointed domestic sales manager, according to an announcement made by V. L. Snow, director of sales.

Succeeding Bloomquist as sales and service manager at the Hibbing, Minn. branch is R. M. Brown, Euclid district sales representative in Ohio, Michigan, Kentucky and Western Pennsylvania since 1950.

J. E. Ehlert has been appointed district sales representative for the territory formerly covered by Brown.

The Galion Allsteel Body Co.: George J. Bockmann has been appointed northwestern regional sales manager, with headquarters in Omaha from which he will direct sales of Galion Allsteel dump bodies, 3- to 60-ton capacity hoists and LOAD-elevator rear-end loaders.

Butler Manufacturing Co.: R. J. Atkinson has been appointed sales manager of the Steel Buildings Division. He will direct the sale of Butler buildings throughout the United States.



MALSBARY 250 steam cleaner cleans heavy grease, caked clay, dirt from shovel in 4 hours.

ARE YOU SPENDING TOO MUCH TIME CLEANING EQUIPMENT?

Switch to
Malsbary
HPC* Cleaners

Get results like these:

Equipment Cleaned	MALSBARY HPC* Cleaning Time
D7 and D8 Tractors	1½ - 2 hours
TD 9 Dozers/shovel	2 hours
Motor Grader	3½ hours
1½-yd. Shovel	3 - 4 hours
Clamshell buckets	30 minutes
Payloader	45 minutes

*HPC (patented) = high pressure (to 400 p.s.i.) + combination of either hot solution to 325° F., cold water, or steam.

HOW MALSBARY CLEANING PAYS OFF

- Checks wear by removing abrasive, corrosive dirt, grease, road oils.
- Reduces downtime by revealing worn or faulty parts in time to replace or repair before expensive breakdowns occur.
- Saves up to 40% of mechanics' time by eliminating grease wiping.
- Cuts painting costs.
- Increases efficiency of equipment and operators.

See for Yourself

Ask us to demonstrate on your job, against your present cleaning methods, how MALSBARY HPC Cleaners save time and do a better cleaning job. Fill in and mail coupon NOW.



Room C11, 845 92nd Ave. • Oakland 3, Calif.

Malsbary Mfg. Co., Room C11, 845 - 92nd Avenue, Oakland 3, California

51

I AM INTERESTED IN —

- ☐ On-the-job demonstration. ☐ MALSBARY catalog-in-brief No. 150-R
☐ "Why and How of Steam Cleaning" reprint.

Name Position

Business

Address

Ask the man behind the gun . . .

White gives you everything you want in an engineer's transit



Shown, model 7014 with "A" standard. "U" type also available.

WHY are more and more engineers and builders choosing White Engineers' Transits? Basically, the reason is simple: White transits are designed and built for the man in the field. They incorporate all the work-saving, accuracy-boosting features . . . the rugged construction . . . the simplified quality components that you want. In addition, you get coated optics, covered leveling screws and internal focusing Telescope. Wide frame tripod is optional.

YOUR CHOICE OF THREE RETICULES AS SHOWN BELOW —



Fig. I
Cross hair
arrangement for
our standard
levels.



Fig. II
Stadia hair
arrangement for
our standard
transits.



Fig. III
Special stadia
hair arrangement,
furnished
upon request.

To get the details on the complete White line of instruments for Engineers, Surveyors and Builders, write for Bulletin 1053, DAVID WHITE COMPANY, 343 W. Court Street, Milwaukee 12, Wisconsin.



We offer the most expert REPAIR SERVICE on all makes, all types of instruments

Nordberg Manufacturing Co.: Transfer of Peter C. Friend, sales engineer, to the San Francisco district office is announced by D. A. Cheyette, vice-president, Crusher Division. In his new assignment, Friend will assist T. D. Davis, Western branch manager, serving customers and prospects for Symons crushers and screens, and the complete line of Nordberg machinery for processing ores and minerals in the Western States.

Wright Power Saw and Tool Corp.: Has named Arthur Waldie of Lakewood, Calif., district manager in charge of sales for the eleven western states, British Columbia, and Alberta. The Wright Co. manufactures a line of power saws, including the recently introduced gasoline-powered model.

The Frank G. Hough Co., Libertyville, Ill.: Has announced the appointment of Jim Suter to the post of sales engineer. He will act as liaison between the sales department, Hough district representatives and other departments, and will also be concerned with improvement and development of the company's line of "PAYLOADER" tractor-shovels and tractors.

The Lincoln Electric Co.: Robert J. Hirsch as district sales manager will head the company's North Haven office. He will be responsible for the sales of Lincoln arc welding machines and electrodes throughout Connecticut.

Richard P. Lindgren will be district manager in Moline, Ill., serving northwestern Illinois and central and eastern Iowa areas.

Gar Wood Industries: B. F. Whitbread has been appointed product sales manager for hydraulic hoists and dump bodies. In his new assignment, he will be responsible for a concentrated sales effort in the construction and automotive fields.

Ross Miller has been named sales manager of St. Paul Hydraulic Hoist, Mattoon, Ill. One of the world's oldest manufacturers of truck equipment, St. Paul produces hydraulic hoists and dump-truck bodies, Pax-all refuse collection bodies, Dump-it farm conversion hoists and Frate-Gate elevating end gates.

H. J. Howerth has been named product sales manager for Gar Wood truck winches and cranes.

H. H. Hippler is the new director of sales and service administration. He will be responsible for distribution of all corporation products, including truck equipment—hydraulic hoists and dump bodies; Load-Packer refuse collection bodies, winches and cranes; and construction equipment—bulldozers, ditchers, excavators and road-building machinery.

(Continued on page 132)

CONSTRUCTION ESTIMATES and COSTS

A practical book that shows you how to estimate construction costs quickly and accurately. Gives step-by-step instructions for estimating construction work of all kinds, including excavations, all parts of buildings, concrete, structural steel, and material transportation, profit, overhead, etc. Includes many illustrative, worked-out estimates of typical jobs. By Harry E. Fulver, Prof. of Civil and Structural Engineering, Univ. of Wisconsin. Second Edition. 653 pp., 257 illus., and tables, \$8.00



SOIL MECHANICS, FOUNDATIONS AND EARTH STRUCTURES

Covers the theory of soil mechanics and the principles and practices of designing and constructing foundations and earth structures. Emphasizes experimental data and field observation, giving numerous examples of structures. Covers estimation of shearing strength of soils, lateral earth pressures, effects of plastic flow, sensitivity of various clays to remodeling, etc. By Gregory P. Tchebotaroff, Prof. of Civil Engineering, Princeton Univ. 655 pp., over 400 illus., \$7.50

PILE FOUNDATIONS

Provides the information required for the design, driving, and maintenance of pile foundations. Covers the relations between borings, soil mechanics, and pile foundations; the most effective methods for determining pile capacities from driving resistances and friction values; the selection of rigs; the factors affecting choice of pile type, etc. One chapter supplies over 50 actual cases of pile foundation failures, with causes, methods of prevention, and remedies. By Robert D. Chellis, Structural Engineer, Stone & Webster Corp. 646 pp., 254 illus., \$14.00



WRITING the TECHNICAL REPORT

Shows clearly and step-by-step how to write the kind of technical reports that are clear, easy to read, and that win acceptance for your ideas. Tells how to analyze the type of report, how to choose the best form and style, how to organize the material, how to use figures, tables, and annotations, etc. By J. Raleigh Nelson, Prof. Emeritus of English in the Coll. of Engineering, Univ. of Michigan. Third Edition. 356 pp., \$4.50

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Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus few cents for delivery, and return unwanted book(s) postpaid. (We pay for delivery if you remit with this coupon—same return privilege.)

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- ☐ Tchebotaroff—Soil Mechanics—\$7.50
- ☐ Chellis—Pile Foundations—\$14.00
- ☐ Nelson—Technical Report—\$4.50

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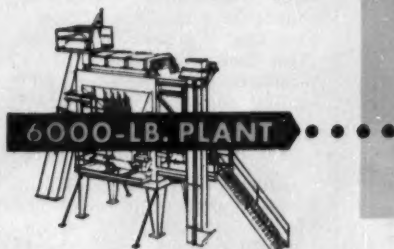
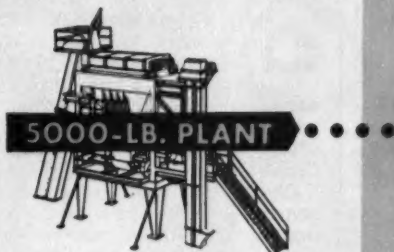
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For price and terms outside U.S.,

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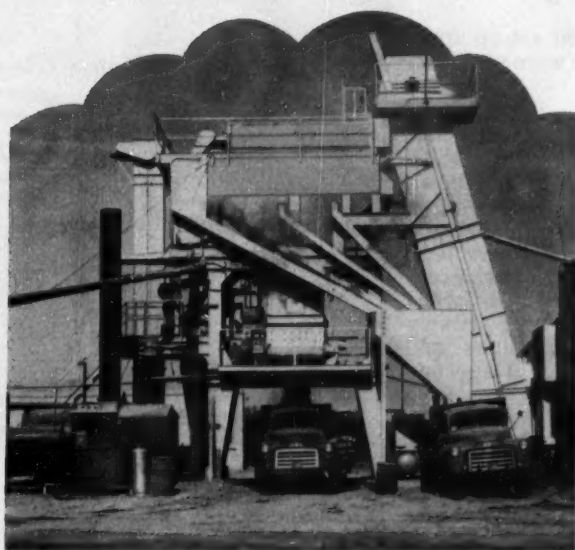
which **MADSEN** ASPHALT PLANT

**...is right
for your
operation**

TODAY?

NEXT YEAR?

5 YRS. FROM NOW?



Here is a MADSEN Model 481 Asphalt Plant in operation for a mid-west contractor. Note the clean, efficient appearance of the plant...the operator platform on the end of the plant away from heat and dust...the combination overflow and reject bin mounted on the side of the plant for easy accessibility.

You may be certain what your asphalt plant requirements are today, but what about next year or 5 years from now? The chances are you will want to increase your production capacity as the years go by . . . and MADSEN engineers have taken this important point into consideration in designing the outstanding MADSEN Model 481 Asphalt Plant. You can purchase the Model 481 as a 4000-lb. Plant and, with only minor modifications, and at very little cost, you can convert this plant into a 5000-lb. or 6000-lb. plant at a later date. Basically, the Model 481 is a 6000-lb. plant, being oversize throughout including larger elevator, screen, bins, weigh-box, mixer and drives. Take advantage of this in-built MADSEN versatility, and buy the MADSEN Model 481 — the asphalt plant that lets you increase production up to 50%.

CHECK THESE EXCLUSIVE MADSEN FEATURES

- In-built reserve capacity.
- Exclusive bin design (Patent Pending) eliminates segregation, provides uniform aggregate withdrawal, and promotes improved aggregate distribution in the weigh-box.
- Oversize capacity weigh-box with air-operated gate, 4-point lever suspension, roller-mounted so that it may be quickly rolled out of the way for field maintenance.
- In-built duct work to relieve pressure on mixer weigh-box housings, bin, hot elevator and screen housings to draw off vapors, moisture and dust.



Write today for your copy of Catalog No. 800 and list of MADSEN's 25 big Model 481 features.

Equipment that Serves.

MADSEN IRON WORKS, INC.

14100 EAST ROSECRANS AVENUE, P. O. BOX 38
LA MIRADA, CALIFORNIA



NEW 33' SCREED CUTS SET-UP TIME IN HALF

Kept 6 ready-mix trucks busy supplying concrete

Most small contractors still pour floors in small sections, striking off the concrete with a two by four. Then they must wait three or four hours before they can use a rotary trowel to finish the job properly. This often involves overtime payment.

A contractor who saw one of STOW'S large screeds in action asked that they make up a 33' screed for him—with one special feature. He wanted the beam split at the center to make for easier shipment. Tie-rods were used to prevent sag (see photo). No difficulty is encountered in moving the screed because of the efficiency of STOW roller assemblies. Only three men are necessary to operate this screed—one on each end and one in the center with a rope-pull. Use of the long screed eliminated a

great deal of form set-up time, since fewer forms were needed.

In this operation, a layer of concrete was first placed to about half the height of the forms. The steel reinforcing was put down and more concrete poured—up to the level of the forms. Then the slab was screeded. Where bare spots were left, because the concrete was not quite up to screed level, the screed was simply tilted back on its rollers and rolled back part way for a second pass.

Because of the STOW screed's vibrating action, a stiff, 1" slump mix was used, producing a stronger concrete. And, because the mix was stiff and dry, they were able to put rotary trowels on the floor for an extra-fine finish one hour after screeding.

For complete information on the STOW line of concrete vibrators and screeds, see your STOW Distributor, or write for Bulletin 526, specifying the equipment in which you are interested.



STOW

MANUFACTURING CO.

31 SHEAR STREET

BINGHAMTON, N. Y.

SALES AND SERVICE . . .

Continued

Autocar Division, The White Motor Co.: Karl Pearson, formerly Autocar district manager in Detroit, and the state of Michigan, has been named regional sales manager for Pennsylvania, Southern New Jersey, Delaware, Maryland and Virginia.

Aeroquip Corporation: Announces the appointment of Forrest F. Hinkley as general manager of Aero-Coupling Corp., Burbank, Calif., Aeroquip subsidiary. Hinkley will be responsible for all sales and manufacturing functions of the West Coast subsidiary.

Charles W. Sawhill is the new general sales manager of this corporation. He will be responsible for sales to industrial and aircraft accounts on the West Coast. Aero-Coupling Corporation serves the West Coast market for aircraft and industrial hose, fittings, and self-sealing couplings.

In the Main Office

Gardner-Denver Co.: A. G. Lindquist, secretary and comptroller, has been elected vice-president of the company. Lindquist, who has been associated with Gardner-Denver for the last 16 yr, will continue as secretary and comptroller, in addition to his new duties.

Special Mention

Harnischfeger Corp.: Announces an agreement with Steelweld Pty. Ltd. of Sydney, New South Wales, covering manufacture of P&H truck cranes in Australia. Steelweld is a subsidiary of Industrial Engineering Ltd., which manufactures or assembles other American and English-designed equipment under license. Under the agreement, Steelweld will manufacture the P&H Model 55 TC Miti-Mite and the P&H Model 105 TC. These machines are the smallest members of the P&H truck-crane line-up, being of 7- and 10-ton crane capacity respectively.

Famous Last Words . . .

(By L. H. Scott, Turner Construction Co.)



"I ALWAYS LOOK WHERE I'M GOING!"



You Get More Use per Dollar

with Homoflex Hose

For air, water, other fluids and gases Homoflex Hose is easier to handle because it has no pre-set twist, coils and uncoils easily with no kinking, is light in weight, yet strong, and "Flexible as a Rope."

R/M Hose Engineering makes possible high flexibility . . . homogeneous cover, strength member and tube that are inseparable.

Homoflex Hose gives you

"More Use per Dollar" two ways . . .
men do more work with it . . .
and it lasts longer.

Ask the R/M Distributor for Bulletin 6879 . . .

and, don't forget, there's equally good
"More Use per Dollar" engineering in
All other types of R/M hose, conveyor belts,
V-belts and flat transmission belts.

**R
M**

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.



Flat Belts



V-Belts



Conveyor Belts



Hose



Roll Covering



Tank Lining



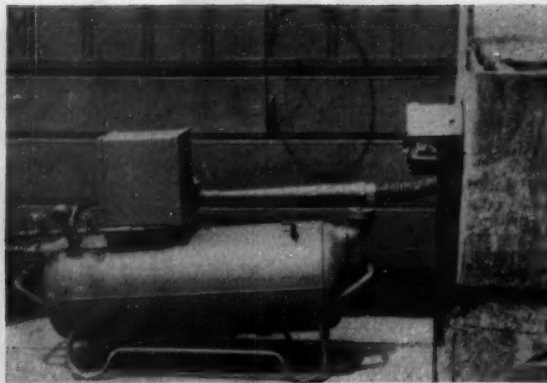
Abrasive Wheels

Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
Asbestos Textiles • Packings • Engineered Plastic, and Sintered Metal Products • Bowling Balls

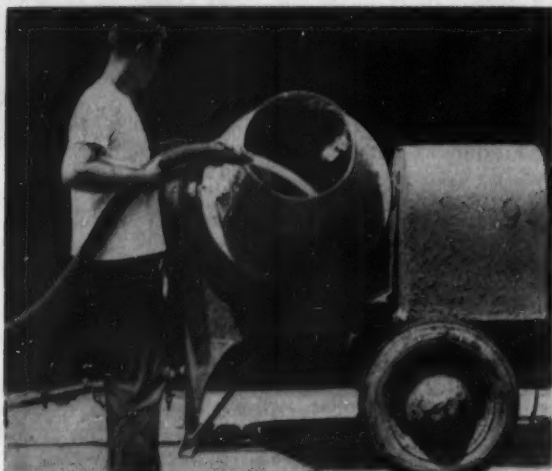
IRM 408



AEROFILL, a new lightweight insulating cellular concrete is made by introducing air cells consisting of preformed stabilized foam into a mix of Portland cement, sand and water.



FOAM IS MECHANICALLY PRODUCED by this simple aerator machine which quickly makes a fine textured foam. The foam is then added to the mortar mix in predetermined amounts.



NO SPECIAL EQUIPMENT is needed for mixing—any standard concrete, mortar or plaster mixer can be used. Aerofill concrete sets and hardens like ordinary concrete.



AEROFILL IS EASY to pour in place, apply by spray. The properties of Aerofill prevent segregation, making it possible to pump through small bore hoses.



MATERIAL IS EASILY SAWED, bored, nailed, chopped or shaved, using only carpenter's tools. Cutting away for electrical conduit or piping is similar to working with wood.

"Whipped Cream" Concrete

CONTINUED IMPROVEMENTS in building techniques and increasing interest in thermal insulation have resulted in low-cost lightweight insulating cellular concretes that have low absorption features and are practically fireproof.

Aerofill is made by a new method. Water and a stabilizing chemical are transformed into a stable foam by a special generator, which is a simple, compact unit with a single valve control. This foam, composed of air cells of uniform size, is then added to a conventional mix of portland cement and sand in predetermined quantities. Relation of strength to weight remains constant and reproducible for any given density. Because of the low water content, Aerofill sets very quickly.

Aerofill is being marketed by Cellular Products Company, 1238 S. Atlantic Blvd., Los Angeles, Calif.



MULTI-PURPOSE LOADERS SAVE MONEY



Examples of many uses for Eimco 105 Tractors with excavating attachments are sent in by Eimco's field engineers. The customer buys his Eimco for loading but usually finds that it also performs many additional jobs that make the 105 pay for itself quickly in bonus work.

The picture above shows an Eimco high discharge excavator attachment on an Eimco 105 Tractor loading into an ore bin. The owner decided he could save time by cutting a new road into his pit and found the 105 could cut its own road.

Many other Eimco 105 owners are finding them ideal for ripping up old curbs and paving, tearing out old foundations, digging ditches, basements, patching highways and many other jobs in the heat of the desert or the cold of the Yukon — Eimcos are tops on any job anywhere.

Write for more information.



Eimco 105



Eimco 105 with bulldozer attachment

THE EIMCO CORPORATION

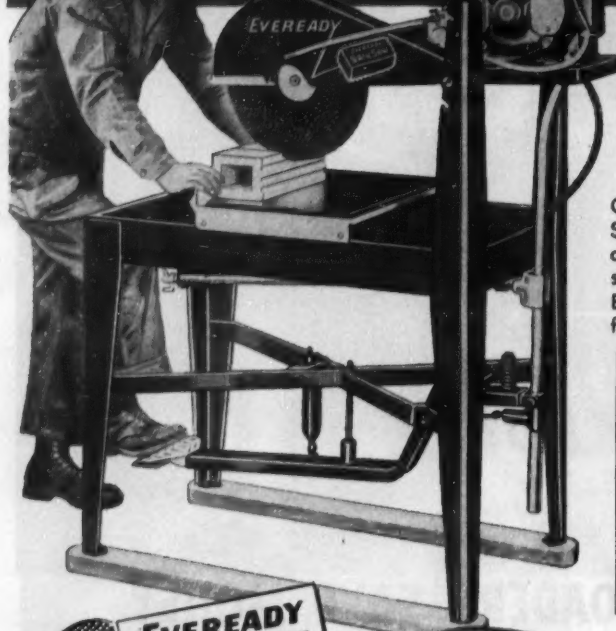
Salt Lake City, Utah—U.S.A.

• Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala. Duluth, Minn. Kellogg, Minn. London, Eng. Paris, France Milan, Italy



EVEREADY BRIKSAW



**CUT ANY MASONRY
MATERIAL FAST...
...AT LOWEST COST!**



Cutting WET (Dustless) or DRY, Eveready BrikSaw is the fastest, most efficient Masonry Saw on the market. The simplicity of BrikSaw's design plus the EXCLUSIVE labor-saving features, make BrikSaw the most profitable to operate masonry saw for any job.

EXCLUSIVE FEATURES



"Adjust-Height" lets cutting head change elevation for materials of varying thickness... adjusts in 4 seconds.

Swing the cutting head to any desired position with this "Toe-Matic" foot treadle. Fast shift from one type of masonry material to another.

One-piece cutting head for immediate, easy portability. Off saw frame in 21 seconds flat!

Automatic pressure control for the blade. Adjusts cutting pressure to hardness or softness of material.



**EVEREADY
XTRA-CUT
ABRASIVE BLADES**

Consistent, uniform quality—the blades you buy next month will give the same peak cutting performance as the blades you buy today. Available in both WET and DRY cutting specifications, to fit every Masonry and Hand Power Saw.

YOUR
EVEREADY DEALER CARRIES
THE MOST COMPLETE LINE
OF MASONRY AND CONCRETE
CUTTING EQUIPMENT



**EVEREADY
TUFFIE
REINFORCED BLADES**

For Masonry Saws and Hand Power Saws. Virtually unbreakable... recommended for difficult edge cuts... grooving... grinding cuts. Internally reinforced with NYLON "SAFETY-WEB". You can drop it, bend it, twist it.



FREE BOOK

FREE BOOK on Masonry cutting... requested by more than 18,000... will be sent without obligation... or ask your dealer.



**EVEREADY
POWR-DRIVE
CONCRETE SAW**

Takes the "Push-Pull" out of Concrete Sawing—drives FORWARD AT CONTROLLED SPEED! "POWR-DRIVE" increases cutting footage with less operator effort—cuts at the lowest possible cost per lineal foot, whether used on small patching or trenching jobs or on continuous, full-scale joint cutting of highways, streets, airport runways.



**EVEREADY
RED-I-CUT
DIAMOND BLADES**

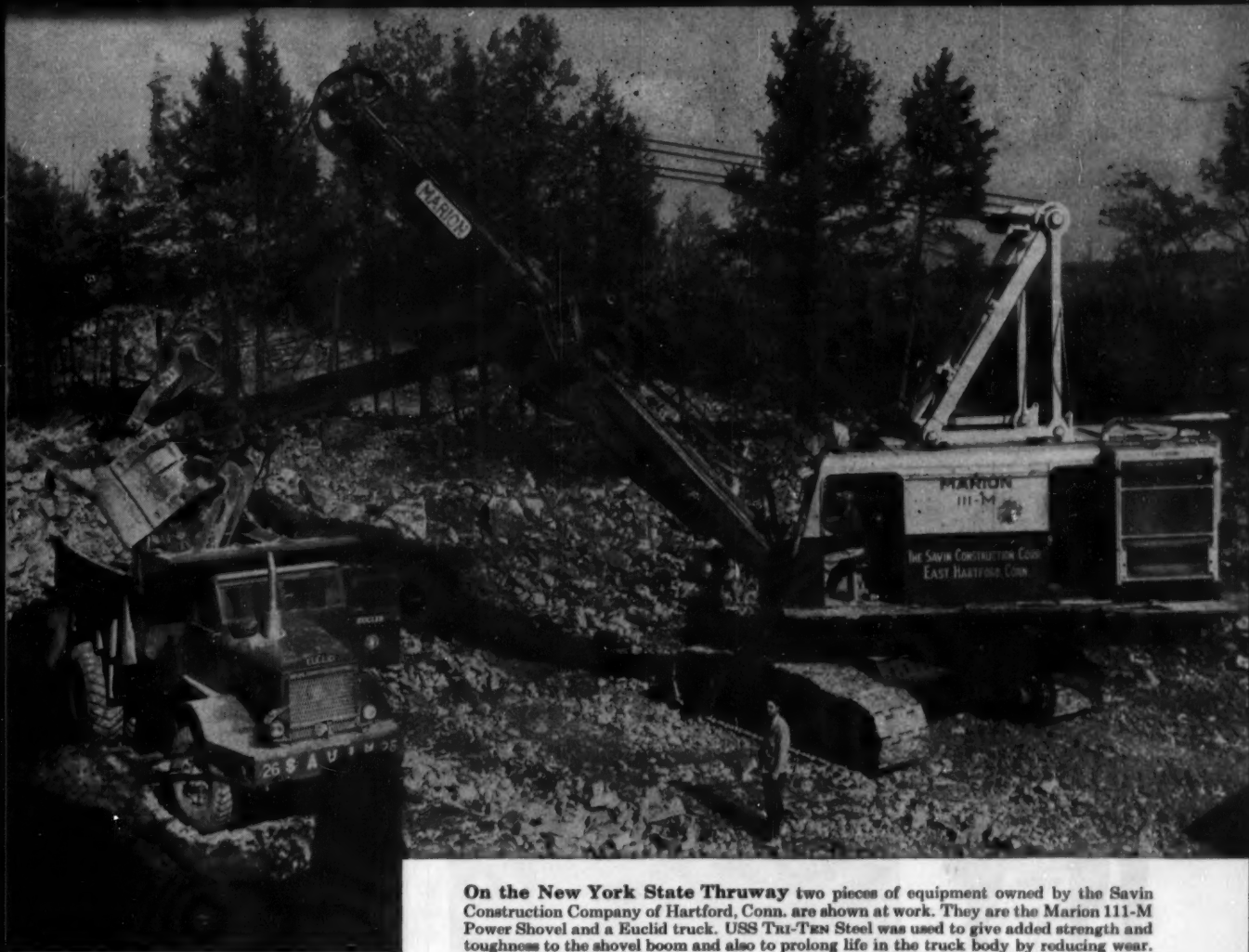
NEW
Continuous Rim

For Masonry Saws cut two to three times faster than standard abrasive blades when used to cut hard, dense, vitreous materials such as Glazed Tile, Glass Block, Fire Brick, Marble, etc.



EVEREADY DEALERS...
in Most Principal Cities in the United States and Canada
Write for the Name of Your Nearest Dealer.
**EVEREADY BRIKSAW CO. • 1509 S. MICHIGAN BLVD.
CHICAGO 5M, ILL.**





On the New York State Thruway two pieces of equipment owned by the Savin Construction Company of Hartford, Conn. are shown at work. They are the Marion 111-M Power Shovel and a Euclid truck. USS Tri-Ten Steel was used to give added strength and toughness to the shovel boom and also to prolong life in the truck body by reducing wear.

USS HIGH STRENGTH STEELS help build famous New York State Thruway!

● Outstanding among the many pieces and types of earth-moving equipment working on this big highway project is the Marion 111-M Power Shovel. Working 50 hours per week, this 111-M with its 4-yard dipper, has been moving between 40,000 and 50,000 yards per month—a really remarkable record when you realize that this is the toughest kind of digging. It's 100% very hard lime rock.

To give this shovel the strength, toughness and fatigue resistance needed to handle jobs like this, the Marion Shovel Company selected USS TRI-TEN for use in the all-important shovel boom. The Engineering Department at Marion says,

"TRI-TEN was used because of its shock resisting ability at low temperature, together with high tensile strength. It also lends itself well to welding in the shop, which makes it relatively easy to handle."

Marion and other companies specializing in the construction of heavy-duty earth-moving equipment have a long record of use of USS HIGH STRENGTH STEELS. This is convincing proof of the ability of these steels to give equipment the stamina to stay on the job.

USS TRI-TEN, USS MAN-TEN and USS COR-TEN Steels resist wear, impact and abrasion. They have a yield point 50% higher than carbon steel. With these outstanding steels it is

possible to build maximum strength and toughness into vital parts ordinarily prone to failure. With them you can materially increase the strength of parts without increasing their weight. Or you can use USS TRI-TEN, USS MAN-TEN and USS COR-TEN Steels in lighter sections to reduce weight without reducing strength and stamina.

Contact our nearest office and let us show you exactly how you can apply USS HIGH STRENGTH STEELS to make your equipment able to do more work with less downtime for maintenance and repairs. For 20 years our engineers have cooperated with equipment manufacturers in applying these steels.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS HIGH STRENGTH STEELS

USS MAN-TEN • USS COR-TEN • USS TRI-TEN • USS A-R STEEL



4-1477

UNITED STATES STEEL

Shop-Made Crane Hook Saves Labor, Promotes Safety

A 10-TON CAPACITY crane hook, designed by William Mittry Constructors of Los Angeles and built in the company's own shop, is in use on Oahe Dam and is proving not only a labor saver, but also a valuable safety device.

The hook, resembling a pair of ice tongs, has two semicircular arms that are opened and closed by air-actuated cylinders controlled

remotely through air hose by the crane operator. The arms interlock and dovetail and cannot be disengaged while carrying a load.

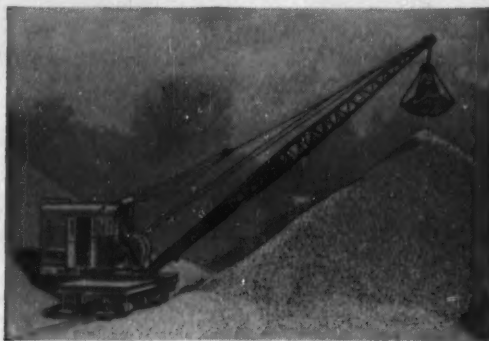
The buckets containing 11,000 lb of concrete are delivered by truck from the mixing plant and are automatically picked up by the hook, saving the services of a man normally on hand to engage and free the conventional hook.



CRANE HOOK opens and closes by air-actuated cylinders controlled through hose by crane operator in cab.



"She's 26 years old...
and **more** rugged than ever!



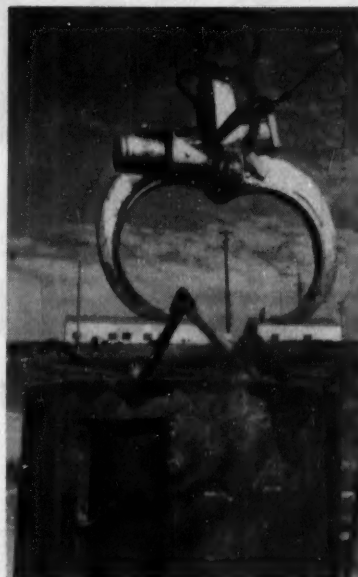
Railway Crane repowered with a D-326 Cat equipped with S-N Gear Model 2265-12/3065 - 5P

thanks to **S-N** reduction gears"

says The Dolomite Products Co., Penfield, N. Y.

Repowering this Brownhoist Railway Crane with a new "Cat" engine called for a transmission gear unit that would stand up to the gruelling, rugged grind of heavy stock-piling jobs . . . provide smooth transmission of full power from engine to load with a minimum of maintenance cost. S-N heavy duty herringbone Reduction Gears with Cut-off Clutches, meet all these requirements . . . and more! Can be installed as original equipment, too, with all types of engines from 40 H. P. units to 775 H. P. giants. Available in a broad range of reduction ratios — 1.5:1 up to 4:1.

Write industrial division for catalog sheets.



HUGE CRANE TONGS lift 11,000-lb bucket-load of concrete, cannot be disengaged while in transit.

Mechanical handling of buckets also does away with two safety hazards: (1) prevents man's hand from being caught between bucket bail and hook, as sometimes happens, and (2) reduces chances of man being hit or knocked off the truck by the bucket as it is swung by the crane.

Mittry Constructors has a \$9,-459,584 contract for construction at the Army Engineer's Oahe Dam across the Missouri River near Pierre, S.D.



SNOW-NABSTEDT

Transmission Engineers
FOR NEARLY HALF A CENTURY

INDUSTRIAL DIVISION

THE SNOW-NABSTEDT GEAR CORP., HAMDEN, CONN.



The Engineer's Report

CASE HISTORY

*RPM Multi-Service
Gear Lub.*

LUBRICANT

*Orr & Orr Construction Co.,
FIRM Phoenix, Arizona*

Rear axles "perfect" after 1755 hours on rock haul



SHORT HAULS ON STEEP GRADES WITH OVERLOADS OF ROCK was the tough job assigned to three Orr & Orr Construction Co. Kenworth dump trucks. But rear axle gears, lubricated with RPM Multi-Service Gear Lubricant, showed no measurable wear when torn down for inspection by the manufacturer's mechanics after eight months—1755 hours service. Mechanics reported

hypoid differential gears and final reduction planetary gears "perfect." All gears, bearings and other parts were put back in service. Orr & Orr Construction Co. uses RPM Multi-Service Gear Lubricant in all types of gear units. They operate equipment on highway, street, dam and other construction projects throughout the Southwest.



ONE OF THE KENWORTH AXLE UNITS is shown here. All three are full floating, planetary type. Gears have a total reduction of 19.23 to 1. RPM Multi-Service Gear Lubricant protects all gears in the most severe operations.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your distributor, write or call any of the companies listed below.



TRADEMARK "RPM" REG. U. S. PAT. OFF.

How RPM Multi-Service Gear Lubricant prevents wear in severe conditions



- A. Contains a special compound that reacts chemically with metal to form a protective lubricating coating...resists rubbing action of hypoid gear teeth.
- B. Withstands extreme temperatures and pressures...highly oxidation resistant. Keeps gears and bearings cool.
- C. Inhibitors resist rusting, stop foaming in cases. Lubricates integral bearings and other parts. Will not separate.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA OIL COMPANY, Barber, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado

TRAIL or TOLL ROAD

Nello L. Teer Co. used 12 "Euclid" of 22-ton capacity on this rugged section of the West Virginia Turnpike. The dependable performance of these big Rear-Dumps helped keep this 1,700,000 yd. contract right on schedule.

Whether the job is building a mountain trail, a farm to market road or a modern super-highway, there is a size and type of Euclid earth moving equipment to do the job fast and economically.

For example, Rear-Dump "Eucls" for hauling rock and heavy excavation range in payload capacity from 10 to 50 tons . . . Bottom-Dumps carry heaped loads of 15 to 30 cu. yds. of earth, gravel and free flowing material . . . self-powered Scrapers pick up and haul

heaped loads of 9 to 21 cu. yds. (7 to 18 yds. struck). And for fast mobile loading of large capacity hauling equipment on big yardage jobs, the Euclid Loader is unequalled for low cost production.

Road contracts during the next 10 years will be awarded at a record rate. They'll go to contractors with equipment that does the job faster and at lowest cost. Your Euclid dealer will be glad to provide helpful facts and figures . . . get in touch with him soon.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Cable address: YUKLID

Code: BENTLEY



Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



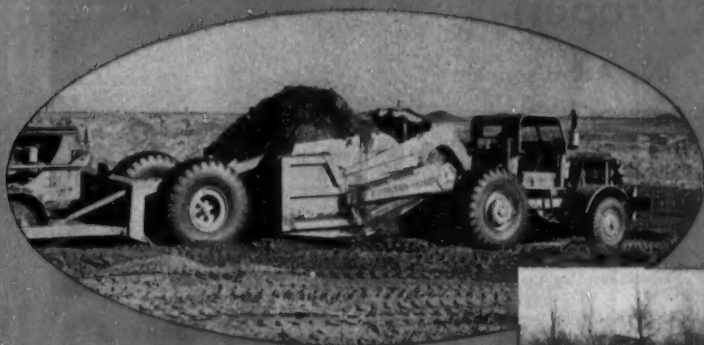


"Eucls" do the job!

On the Ohio Turnpike "Eucls" outnumbered competitive rubber-tired equipment by better than 4 to 1 and were on practically every section of this 241 mile job. In this photo, a Bottom-Dump with a heaped load of 18 yds. pulls away from a "Eucl" Loader for a long haul to the fill. Two Loaders and 16 Bottom-Dumps made the dirt fly for D. W. Winkelman Co. on this eastern section.



Jamaica's Public Works Department uses a fleet of seven 10-ton "Eucls" for construction and maintenance. In the illustration, tractor loaders teamed up with Model UD Euclids in close quarters at a side hill cut during construction of a road along the coast.



In California, Fredericksen & Kaser used 4 "Eucls" to move clay overburden and wet sand fill material for an overpass project on U. S. Highway 99. Unusually high job availability and long blade life were important factors in maintaining low yardage cost and high production for this contractor.



PERFORMANCE AND HIGH JOB AVAILABILITY HAVE MADE "EUCS" THE PREFERRED EQUIPMENT OF EARTH MOVING CONTRACTORS

For small road grading jobs and other projects where speed and exceptional maneuverability are important, the Euclid S-7 Scraper is the answer. It is powered by a 136 h.p. engine, has a struck capacity of 7 cu. yds. and makes a non-stop turn in 26 feet.

On the New York Thruway contractors used all types of Euclid equipment for the wide range of job conditions. On a 2½ million yd. contract near Kingston, John Arborio, well known Poughkeepsie road builder, used 7 Twin-Power Scrapers on a particularly tough section of the job. The Twins' tremendous power and traction kept the job going when other equipment was stymied . . . they moved loads of 17 bank yds. on grades up to 20% and had power to spare.

Easy loading and fast travel speed of "Eucl" Scrapers paid off for Cook Construction Co. on this section of the Ohio Turnpike. Top extensions on the six "Eucls" increased the struck capacity to 18.5 cu. yds. Complete cycle time—load, haul, dump and return—was only 3.6 minutes for the 2000 ft. round trip with heaped loads of about 20 yds.





A GOOD BLAST IS NOT SPECTACULAR. Properly placed explosives shatter rock, expand and lift the mass several feet — but there is no flying material, only boiling gas. Buildings adjacent to this highway job are in no danger.

How to Protect Public Property When Blasting

(No. 4 of a series)

Property Owner vs. Contractor

When the property owner feels the vibration and hears the detonation of explosives he immediately questions, "Will the contractor's blasting damage my building?" By the same token, when a contractor sets up his procedure for the use of explosives, he is likely to ponder, "How many pounds can I use without affecting buildings? Will I have to reduce the number of pounds because of the nearness of these structures?"

The Safe Charge

A safe charge delivers an energy ratio (ER) less than three at a building. ER is a function of acceleration (a) and frequency of vibration (n) which in turn depend upon the explosion-to-building distance (D), the weight of explosive (e) and a ground transmission constant (K).

$$ER = \frac{a^2}{n^2} \quad (1)$$

$$ER = \frac{(50)^2}{D^2} \quad C^2K \quad (2)$$

$$\frac{a^2}{n^2} = \frac{(50)^2}{D^2} \quad C^2K \quad (3)$$

A safe charge is computed with (2) by giving ER a value of 3 and solving for C.

The constant (K) ranges from .001 (hard rock) to .008 (swampy ground). It is obtained by placing an accelerometer 50 feet from a known explosive charge, then detonating the charge. Weight of explosive (pounds), distance (feet), acceleration (feet per second squared) and frequency (cycles per second) are substituted in (3), which is solved for K.

The accelerometer records frequencies (n) and relative amplitudes in three planes. Amplitudes are translated into acceleration (a) for use in computing K.

Charges based on the formulas are sufficient to break up effectively the materials encountered.

Building Surveys

• Courts all over the country have been prompted to adopt liberal views on blasting liability with the increased use of explosives. In the majority of states they have held that there is absolute liability in blasting damage, and in some jurisdictions no proof of negligence is needed.

• State statutes vary as to what constitutes negligence, such as continuation of work after the contractor was notified that the blasting was causing damage, using more powder than necessary, failing to use a different pattern of blasting from the one causing the damage, and similar actions.

• Arrangements should be made to have a reputable impartial engineer survey every building within 100 feet of the area before blasting begins on a site where there is a chance of damaging buildings.

• The survey should detail every room, noting plaster cracks, broken windows, cracked cellar walls and floors, sidewalk cracks, water-damaged paper, repatched plaster, signs of settlement or previous movement of the building, dampness in the cellar, condition of roof and a general opinion regarding the state of repair of the building.

• The survey should be signed by the property owner and contain the date the inspection was made and the name of the engineer making the inspection. When completed, these surveys should be kept on hand or turned over to the claims department of the contractor's casualty insurance company for future use, in case damage claims are reported.

Fly Rock

• To prevent property damage by a direct hit, fly rock should be held down by covering the area prepared for blasting with heavy mats of fibre or wire rope, where possible. Railroad ties or heavy logs may be used, if chained together with at least two heavy chains.

• Correct loading and tamping of blast holes also will control fly rock. This knowledge may be obtained by experimenting with the initial shots; and an experienced blaster will be able to obtain this information before damage is done.

• Before the blasting is started, considerable thought should be given to the position of the open face in regard to the location of surrounding structures. The face should be away from buildings, if possible.

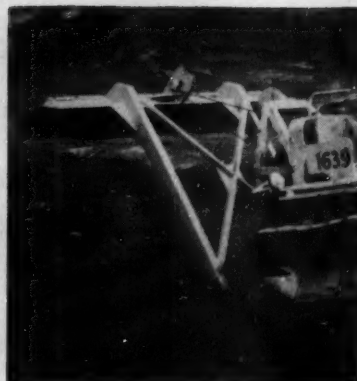
Blasting Records

Progress records showing the number of blasts per day, the amount of powder used, the delays, and the amount of rock excavated per day should be kept by the contractor. This information becomes extremely valuable when property damage claims are being reported by residents in the area.

Signal System

In some areas a signal system of sirens or bells may be found useful in winning the property owners' confidence and also take the surprise out of blasting. The contractor should arrange to have the homes visited, the signals explained, why the blasting is necessary and give assurance that there is no danger.

This article is the fourth in a Public Safety Series designed to reduce damage claims. If you would like a copy of this complete series, write to Loss Prevention Department, Liberty Mutual Insurance Company, 175 Berkeley St., Boston 17, Mass.



Tractor-Mounted MOLDBOARD



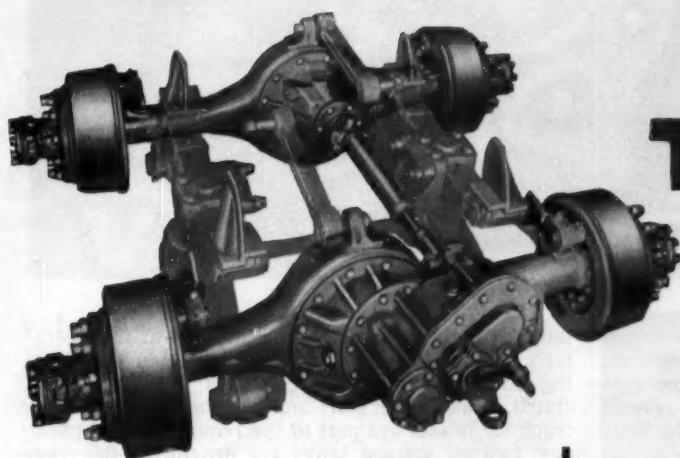
Keeps Rolling Rocks From Busy Highway

A STAR PERFORMER on the Waldo Grade 4-mi approach widening project now under construction between Golden Gate Bridge and Manzanita, Calif., is a moldboard built to a frame and attached to the rear end of a Caterpillar D8. This unit enables the bulldozer operator to reach out over embankments and scrape loose rocks away from the edge where they might roll to the highway below and prove an obstruction to fast-moving traffic.

This handy combination is being used by the Guy F. Atkinson Co. of South San Francisco, Calif., on its \$4,122,382 contract for grading, structures and portion of base and surfacing on the Waldo Grade widening.

The Atkinson contract is part of the \$7,000,000 project, which, when completed, will relieve a long-existing bottleneck on the northern approach to Golden Gate Bridge by the addition of two traffic lanes and a second highway tunnel.

SIX reasons for the superior performance of



EATON TANDEM DRIVE AXLES

1 Designed Specifically for Tandem Operation,

Eaton Tandem Axles are not subject to abnormal stresses or complicated lubrication problems.

2 Single Drive Line

on a normal angle gives a direct lead from power divider to rear axle; simplifies design, eliminates excess parts, minimizes maintenance.

3 Rugged Power Divider

mounted on forward axle, is of simple design; provides for transmission of power equally to both axles.

4 Inter-Axle Differential

in power divider assures equalized power transmission even though wheel speed may vary due to road irregularities or tire diameter variations.

5 Differential Lock-out

between forward and rear axles (optional on some models) provides positive drive to each of the axles, when required because of soft or slippery road conditions.

6 Maximum Strength with Minimum Weight

is achieved through simplified design, experienced engineering, and accurate fabrication.

Ask your truck dealer to explain how Eaton Tandem Drive Axles provide trucks with greater load capacity—reduce tire and operating costs.

EATON

AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND, OHIO



PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings • Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamic Drives, Brakes, Dynamometers

CONSTRUCTION EQUIPMENT NEWS



Remote Control Hydrocrane-Hoe

Both the Bucyrus-Erie Hydrocrane and Hydrohoe are now available with remote control, which permits simultaneous operation of the motor truck and Hydrocrane or Hoe on short moves in first or reverse gears. The remote-control unit has only three basic parts: air supply, control valves and actuating cylinders. Compressed air from the air brake storage

tanks is delivered to the control panel at the operator's station. Fingertip levers operate valves directing air to the actuating cylinders for motor-truck clutch, brake, gear shift and steering arm. Because truck air brakes are part of the remote-control package, two air storage tanks are provided.—Bucyrus-Erie Co., South Milwaukee, Wis.



31-Ton Sierra Movall

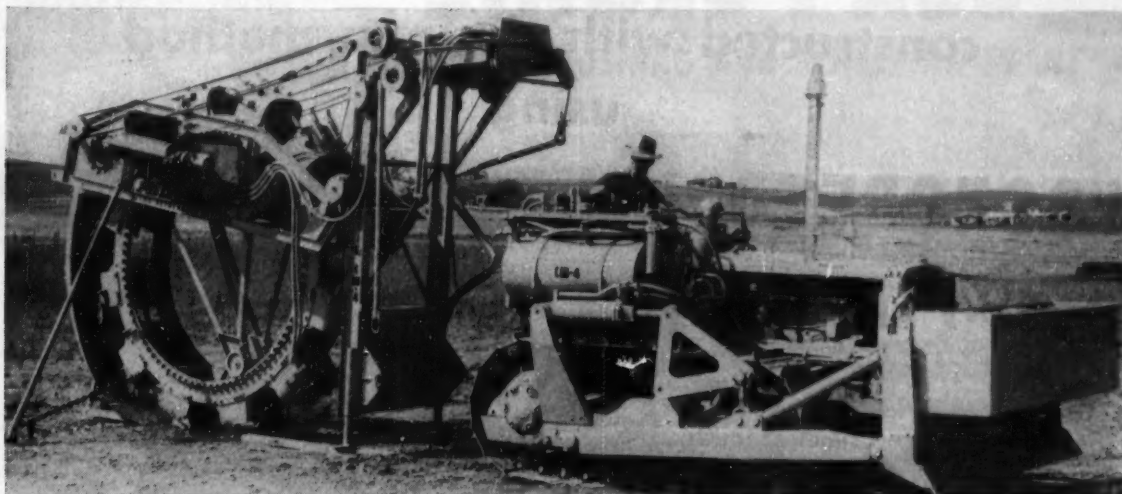
The Sierra Movall, cable-operated end-dump rock and dirt wagon is adaptable for use with Cat DW20 or DW21 tractors. Its maximum carrying capacity is rated at 31 tons, 19 cu yd, struck and 25 cu yd, heaped. The target area is 11x19 ft, and it uses cable-controlled ejection. It will also dump from a jackknifed position. Less tractor, it weighs 29,750 lb.—C&D Manufacturing Co., Perkins, Calif.



Low-Cost Pipe Layer

This Ferguson Pipe and Cable Layer is actually an inexpensive agricultural sub-soiler, with the addition of a guide tube for conducting pipe or cable into the bottom of the cut. A subsoiling pass is first made with the tractor, and the pipe laid on the second pass. It will put flexible piping up to 1½ in. dia. into the ground and down to 18 in.—Massey-Harris-Ferguson, Inc. Racine, Wis.

S On-the-Job Previews of Machinery, Tools and Equipment



Detachable Ditcher for D4

This Unimatic detachable ditcher can be removed within 30 min from the tractor. It will dig to a depth of 5 ft 6 in. with the width of cut ranging from 15 to 24 in., in increments of 1 in. Travel speeds are up to 26 ft per min. Length is 22 ft 8 in.; width 8 ft 3 in., and height 9 ft 11 in.—Unimatic Corporation, P.O. Box 1166, Tulsa, Okla.

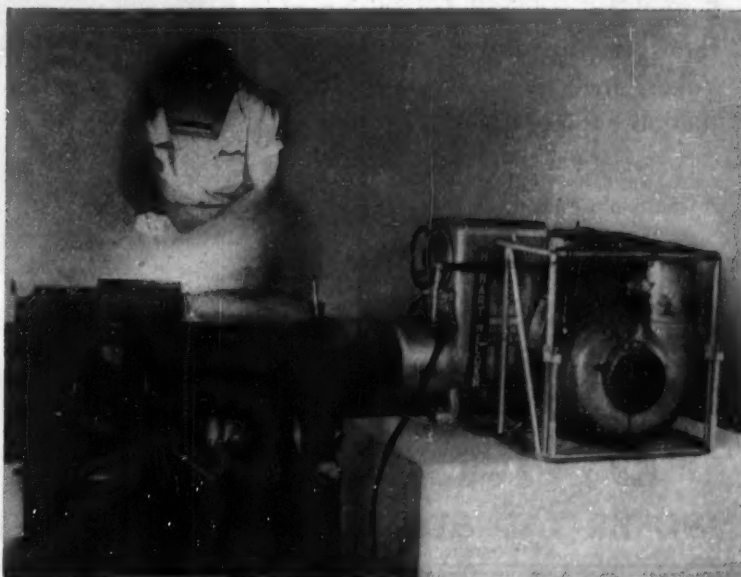
Small, Ladder-Type Ditcher

Designed for digging trenches for all types of service lines, building foundations, etc., is this new Gar Wood Buckeye Model 403 ditcher. It will dig 5 ft deep for 8-, 10-, and 12-in. width cuts and 4 ft deep for 14- and 16-in. width cuts. Power is applied by a gas engine developing 51 hp at 1,600 rpm.—Gar Wood Industries, Wayne, Mich.



Gas Turbine Welder

This Hobart arc welder is reported to be the first welder to use a gas turbine as a prime mover. Although this 250-amp dc welding generator was successfully operated and tested, it is not for sale at the moment. The manufacturer built this special unit to explore the possibilities of more compact, lighter-weight equipment.—Hobart Brothers, Troy, Ohio.



SOARING ALOFT IN 11 DAYS

**constructed with slipform method
using**

"CONCRETOR" HYDRAULIC JACKS

14 story apartment house

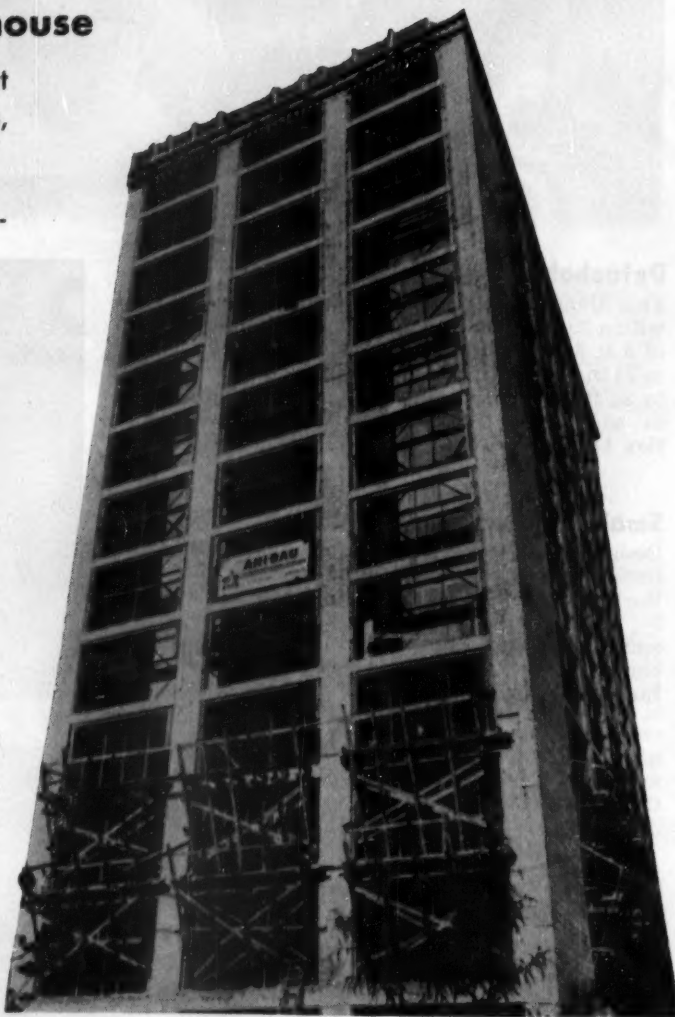
570 feet of walls poured. Light weight insulating concrete blocks, for facing, placed simultaneously.

73 Concretor Jacks were used, operated by one man.



We offer COMPLETE SERVICE:

Everything required for raising of forms is provided by us. Jacks, Yokes, Jack Rods, Pumps and on-the-job engineers.



*Write our Engineering Department for full particulars
on the Concretor system and rental plan available.*

B. M. HEEDE, INC.
80 BROAD STREET • NEW YORK 4, N. Y.



Cedarapids

Built by
IOWA

SINGLE PASS

PORTABLE CRUSHING AND SCREENING PLANT

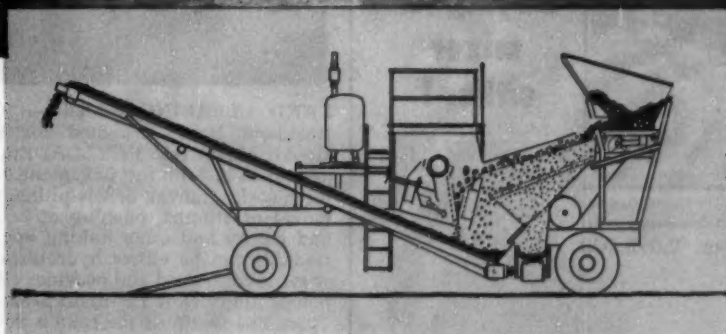


**MOST PRACTICAL
DESIGN**

**SIMPLEST
OPERATION**

**LOWEST
MAINTENANCE COSTS**

**PRODUCES
TWO SIZES**



HERE'S HOW IT OPERATES

Pit run gravel or rock is fed into the hopper where boulders and oversize rock are scalped off by the grizzly. Material in the hopper is carried by the feeder to vibrating screen for sizing. Fines and sand pass through both screen decks and fall into the side sand delivery conveyor. Material passing

through the top deck is chuted to the first delivery conveyor. Oversize off the top deck of the screen passes through the Jaw Crusher and the crushed material is discharged onto the delivery conveyor. This plant features *sand elimination* and also *blending* the desired amount of sand into the finished product by proper position of a flop gate giving a high quality end product. This makes an aggregate that packs and binds satisfactorily. When desired all material can be discharged on the front delivery conveyor by means of flop gate.

Here's the most practical Single Pass Plant available! Just check these improved features for convenience and economy . . . Hopper and feeder on the rear end let you *back up* to the nearest gravel bank and start producing . . . Simple design with few moving parts cuts maintenance costs. Replacement parts are inexpensive . . . *Two sizes of material can be produced!*

The improved Cedarapids Single Pass Plant pays for itself in money saved on county road maintenance work, small state contracts, base or blanket course jobs and dozens of others. Ask your Cedarapids distributor for details.

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.



Master Bituminous
Mixing Plant



Double Impeller
Impact Breaker



Motorized
Head Pulley



Model 640 6000-lb.
Bituminous Mixing Plant



WRIST-ACTION DIPPER—A new hydrohoe attachment with wrist action has been developed by Bucyrus-Erie to increase the utility and speed of the H3 Hydrohoe. The new model retains the basic advantages of the standard model, but introduces a new digging force through the dipper that rotates in a vertical plane through an arc of 65 deg from a position of 25 deg ahead of the handle to 40 deg behind it. When the dipper is rotated simultaneously while the digging ram is extended, the combined effort produces about 38 hp at the dipper teeth and a 50% increase in digging power, which is up to 6 tons of tooth force. The Hydrohoe, with or without wrist-action dipper, is offered either as a complete machine or as an attachment for current H-3 Hydrocranes.—**The Bucyrus-Erie Co., South Milwaukee, Wis.**



**It doesn't
pay to take
chances
when
buying a
mixer
either!**

Taking chances on highways and streets costs America 2,092,000 casualties annually.



● You know just what the performance of a Mixer will be when it's AGC RATED!

For to wear the AGC plate, portable concrete Mixers and Pavers must meet rigid specifications as to sizes and mixing capacity.

Be sure the
Mixer you buy
is AGC RATED!

Mixer Manufacturers Bureau

Affiliated with the Associated General Contractors of America, Inc.

CHAIN BELT COMPANY
Milwaukee, Wisconsin

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

BLAW-KNOX COMPANY
Faute Construction Equipment Division
Nunda, New York

THE JAEGER MACHINE CO.
Columbus, Ohio

THE KNICKERBOCKER CO.
Jackson, Michigan

KOEHRING COMPANY
Milwaukee, Wisconsin

KWIK-MIX COMPANY
Port Washington, Wisconsin

THE T. L. SMITH COMPANY
Milwaukee, Wisconsin

WORTHINGTON CORPORATION
Concrete Machinery Division
Plainfield, New Jersey



LAND CLEARING RAKE—The Rockland Rake, designed for the Hough Model HM PAYLOADER, is an effective tool for pavement ripping, rock removal, debris-piling, removal of stumps, pushing of brush and riprap and other raking operations. It can be either hydraulically or cable controlled and provides clear penetration below the main beam of 14 in. The width of the rake is 96 in. and it weighs 1,200 lb.—**Rockland Allied Equipment Corporation, Harborside Park, Providence 5, R.I.**



CRANE SCALES

—Three new standard sizes of SR-4 Crane Scales in small capacities have been added to the line — ½, 1¼, and 2½-ton models. The scales are based on the simple electrical principle of SR-4 bonded resistance wire strain incorporated in load

cells developed to provide high accuracy and mobility in weighing and to eliminate handling operations to and from stationary scales. They may be mounted in crane cabs, carts, or in stationary positions.—**The Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa.**

New Small unit

...DOES A BIG JOB!

Whiteman **QUALITY!**

...IN A **SMALL UNIT!**

...AT A **LOW PRICE!**



PROFITABLE
EVEN ON
SMALL JOBS!

BRAND NEW!

WHITEMAN Model "M" TROWELING MACHINE

Now even small concrete finishing jobs can be done faster, more efficiently, more profitably by machine! The brand new Whiteman Model "M" Troweling Machine is a small unit that does a big job. 29" trowel diameter permits use in crowded areas while giving adequate coverage for smooth, level finishing and efficient operation. A quality product of Whiteman, pioneer and builder of the first successful troweling machine...a result of 17 years experience and good, sound engineering. Ask your Whiteman distributor about the new Model "M."

- **EASY OPERATION.** Even an amateur can do a good finishing job with the Model "M."
- **LIGHT WEIGHT.** Makes it possible to get onto the slab much sooner than with any other machine.
- **EXTRA POWER.** Famous Continental engine. Surplus power permits floating or finishing at very slow or high speeds, as desired.
- **COMBINATION TROWELS.** Can be used for both floating and finishing by simply adjusting pitch.
- **RIGID TROWEL ARMS.** Reduce wear at base and assure perfect trowel alignment.
- **ADJUSTABLE PITCH.** Trowel pitch adjustable by knob at top of handle with machine in motion. (Exclusive Whiteman Feature.)

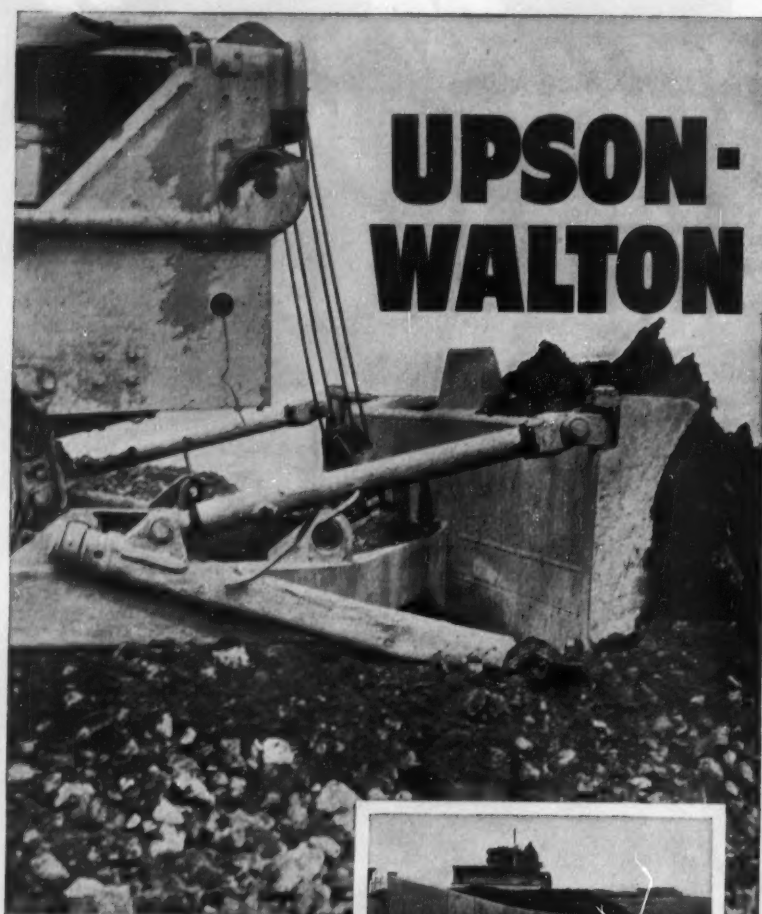


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Please send prices, literature and name of distributor for ☐ Floating-finishing machines, ☐ Troweling machine, ☐ Screeding machines, ☐ Power Buggy.
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Wire rope that's built for tough going

OUT on the job site you'll find more and more contractors choosing Upson-Walton wire rope for their replacement needs. U-W craftsmanship and strict quality standards build in extra service and long life.

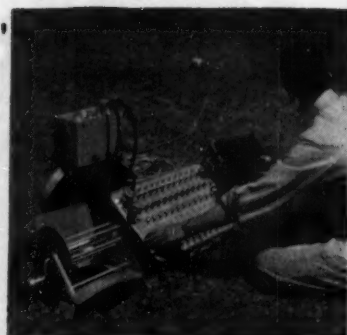
Available in all standard sizes and constructions. Order from your distributor who carries stocks for your convenience. Free catalog on request.

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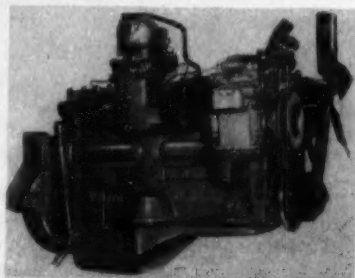


SEISMOGRAPH—This SIE Refraction Seismograph has been used successfully for the determination of depth-to-bedrock, analysis of fill material, location of water-bearing strata, and other subsurface determinations. The information acquired with the seismograph is presented in continuous horizontal and vertical profile, and thus a complete subsurface picture is furnished from relatively few determinations.—**Southwestern Industrial Electronics Co., 2831 Post Oak Road, Houston 19, Tex.**



OIL - BURNING HEATER — The HY-LO BJR Salamander has been designed especially for use where headroom is limited. It has a much shorter stack and larger diffusion hood than the regular types. It measures 53 3/4 in. in height. A patented return gas stack consumes gases returned to the bowl. The

HY-LO produces from 70,000 to 140,000 Btus.—**Scheu Products Co., P. O. Box 262, Upland, Calif.**



AUTOCAR WITH NEW ENGINE—Known as the White Mustang 390A, a 6-cyl power plant featuring a new dome-shaped piston provides 200 hp for Autocar trucks. Also features the companion-shaped combustion chamber which provides a compression ratio of 6.4:1 with excellent detonation control.—**Autocar Division, The White Motor Co., Cleveland 1, Ohio.**

Biting into raw iron...

Two years of tough, schedule-smashing construction by the men of Morrison-Knudsen Company made possible the first shipment of ore from Venezuela's Cerro Bolivar, for the United States Steel Corporation.

To reach the ore deposits, a 91-mile railroad and an 80-mile highway had to be constructed. A monthly average of 400,000 cubic yards of earth and rock was moved to prepare the railway grade alone. Part of the way, excavation was almost entirely in double-extra-hard granite, with a crushing strength of 60,000 psi. And on the southern slope of Cerro Bolivar itself, scores of side-hill cuts were made through hard layers of solid ore that graded 65% or more pure metal.

This was a job that demanded an exceptional combination of engineering skill, determination, and the best of construction and drilling equipment... that's why Crucible Hollow Drill Rods were chosen. For *lowest cost per foot of hole drilled* specify Crucible Hollow Drill Rods.



Crucible Hollow Drill Steel in machines like these bite into ore on Cerro Bolivar.

One of the men who helped make the project possible — C. Dugan Graham, vice-president of M-K de Venezuela, and project manager in charge of the job.

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Available in 6-8, 12-16, 24-28, and 110-120 voltages.

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PHOENIX PRODUCTS CO.

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Write for Illustrated Bulletin.



COLD WEATHER PROTECTION—

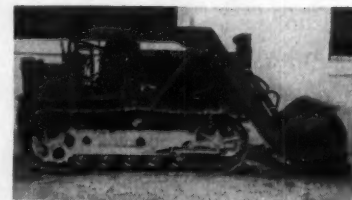
A heavy-duty winterliner, called the ARTIC, is made of soft, close-woven wool-knit and protects the head, neck and face. Colors available are dark brown and tan. Complete information available from the **E. D. Bullard Co., 275 Eighth St., San Francisco, Calif.**



DE-GREASER—

A vapor-type degreasing tank for handling of tools, engine parts, machine parts or any other metal items is now being marketed. It's compact, rugged and requires a minimum shop space of only 40 in. height by 22

in. diameter. It is operated by electricity and reaches a full vapor level within 15 min. The level control is by thermostat and relay circuit.—**The Bacon Vulcanizer Manufacturing Co., 1295 67th St., Oakland 8, Calif.**



TRACTOR SHOVEL—A heavy-duty shovel, the Alstack 40, built especially for The John Deere 5-Roller crawler tractor, has a dumping height of 8 ft 6 in. and a dumping reach of 3 ft 2 in. The width of the bucket is 61 in., and the length over all is 12 ft. An outstanding feature of this shovel is that once it has been mounted, the engine can be removed, the steering clutches replaced, and other maintenance work done without dismantling any part of the shovel. The weight of the shovel alone is 1,850 lb.—**G. A. Stackhouse, Route 28, Rotary Circle, Hyannis, Mass.**



Turnpike tests Transmissions

Contractor D. W. Winkleman is building two stretches of the Ohio Turnpike . . . working in rough, wet cuts, his ten Model C Tournapulls are doing a major share of the 7,300,000 cubic yard excavating job. On this operation the distance from cut to fill is over a mile and a half . . . the Tournapulls make the round trip of over 3 miles in just under 22 minutes. Fuller Model 5-A-1120 Heavy-Duty transmissions are putting every

"Horse" of the 186 hp diesels into the job. In this contest of "scrape . . . load . . . haul . . . return" Fuller 5-A-1120 transmissions gear the Tournapulls with the *right ratio* for each load and grade condition.

The performance of Fuller geared equipment working in every major industry in *all types of on- and off-highway service* has been so outstanding that leading truck and equipment manufacturers standardize on Fuller

transmissions in their vehicles.

From more than 110 different models available for rubber-tired equipment from 100 to 400 hp; engines from 330 to 1440 cubic inches . . . there is a transmission *designed with your job in mind*. Specify a Fuller transmission for your equipment.

really
where horsepower goes to work



FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Division, Milwaukee 1, Wisc. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Western Dist. Branch (Sales & Service, All Products), 641 E. 10th St., Oakland 6, Cal.



To help you hole-thru faster...

COMMERCIAL liner plates speed up mining in soft ground tunneling

Working many feet underground in the heading of a soft ground tunnel, this crew is unconcerned about the possible danger which could result from a cave-in. By installing the COMMERCIAL steel liner plate system of ground support, the contractor of this job is providing the best safety insurance for his men as well as assurance for himself that his job can be completed on schedule.

When you realize that the COMMERCIAL plates have continuous inward flanges with all four corners solid, it is easy to understand why they are so strong and will support such heavy loads. No one wants to take a chance of loosing a heading because of inadequate ground support. A lost heading, like a lost week-end, costs money and takes time to recover from.

Look how close to pay line these "sand hogs" mine. Just a few more spadefuls of dirt need to be removed before one of them will slap the next plate into place while the other will

slip seven bolts thru matching holes in the flanges and quickly tighten up the nuts with a ratchet. Bolt in one hand, nut in the other, two inside vertical flanges between with matching holes—everything out in the open—what could be quicker or more simple?

As all flange joints are butt to butt and plates are curved to the exact required radius, there's no over-mining beyond pay line to cause voids behind the plates. Thus ground ravelling is minimized and reduction of the amount of grouting behind the steel lining, if any, becomes a very substantial cost-saving item.

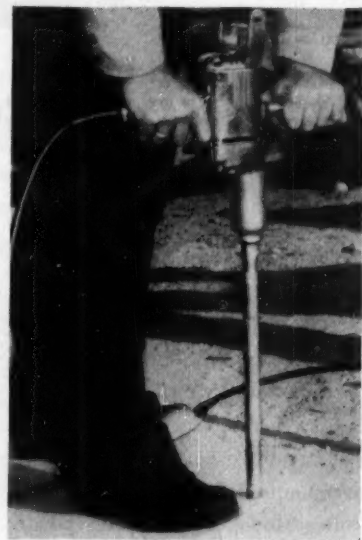
Our experience, from many years work with engineers and contractors who have successfully used the COMMERCIAL liner plate system in hundreds of different soft ground tunnels, can be a great help to give you the footage and safety needed to complete your tunnel on schedule. There will be no obligation.



THE COMMERCIAL SHEARING AND STAMPING COMPANY
Youngstown, Ohio - Chicago, Illinois - Salt Lake City, Utah



SNATCH BLOCK — A new lightweight, 5-ton, portable, multi-purpose all-steel snatch block for use with ½-in. dia wire rope has just been introduced by a Pennsylvania manufacturer. It weighs 22 lb, has an over-all length of 18 in. and is 8 in. wide. It has a 6-in. dia sheave made of forged steel and graphite bronze bearings. It incorporates a safety locking head and links. — **Madesco Tackle Block Co., Easton, Pa.**

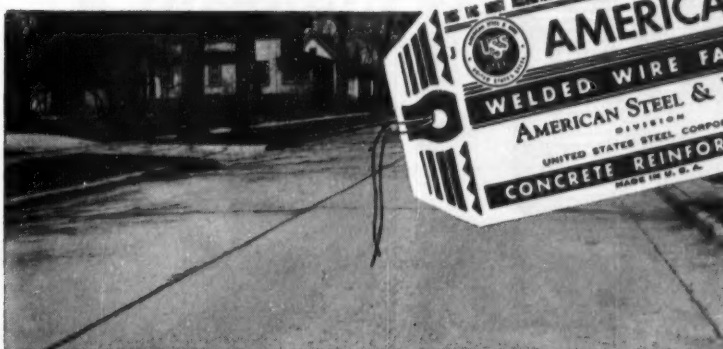


ROTARY HAMMER — This electric portable rotary hammer has a detachable bit for horizontal and overhead drilling of reinforced concrete, masonry and similar materials at faster speeds, and it is claimed, at lower cost. The Demo Model DL-375S hammer rotates at 1,000 rpm and strikes 6,000 blows per min powered by a 115 v, 5 amp ac-dc electric motor, weighs 9½ lb and is 15 in. long.—**The Demo Tool Corp., 8735 Melrose Ave., Los Angeles 46, Calif.**

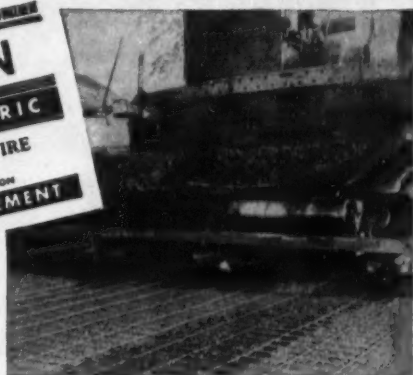


CONCRETE HIGHWAYS can be built to last longer and for less cost with longer slabs and fewer joints if they are reinforced with American Welded Wire Fabric reinforcement.

The wire fabric that is
better than the specs bears this
red and white tag



STREETS CRACK LESS, stay smooth, and require less maintenance when they are reinforced with American Welded Wire Fabric. American Fabric prevents heaving, spalling, and pumping.



MANY APPLICATIONS of reinforced asphaltic concrete, some in service on test roads for many years, indicate that you should reinforce your next asphaltic concrete resurfacing job with American Welded Wire Fabric.

American Welded Wire Fabric offers the greatest assurance that reinforced portland cement and asphaltic concrete will be as strong and durable as design calculations indicate.

We make careful inspections at every stage of manufacture to make sure that quality is high. We check the steel, the wire, the welds, and the finished

fabric for strength and uniformity. As a result, American Welded Wire Fabric not only meets, but exceeds the new ASTM specification A185-53T.

Ask specifically for American Welded Wire Fabric, then you will have no doubts about your reinforcement being able to do the job. There is a size and type for every job.

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EVERY TYPE OF REINFORCED CONCRETE CONSTRUCTION NEEDS

USS AMERICAN WELDED WIRE FABRIC

UNITED STATES STEEL



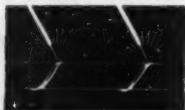
STEEL SPONGE

Mops Up for Contractors



For getting rid of unwanted water on construction jobs, more and more contractors are turning to Naylor light-weight pipe. The wellpoint system illustrated here shows Naylor pipe in action, getting rid of surplus water. The distinctive, light-weight structure of Naylor pipe and its characteristic extra-strength and safety have made it outstanding for handling high and low pressure air and water on all types of construction. Sizes range from 4" to 30" in diameter with all types of fittings and connections. Write for Bulletin No. 507.

NAYLOR



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AUTOMATIC ADJUSTMENT OF DISCHARGE CHUTE — The new Monarch DYNA-CHUTE Electric Hydraulic Power Control has automatic adjustment of the discharge chute for mobile truck transit-mixers. One man, one-lever operation raises, lowers, or holds the chute and assures the free flow of materials. The remote control of the chute provides safety for the operator because the DYNA-CHUTE eliminates the use of extra men to adjust pins, ratchets, and bars beneath the mechanism. With 2,000 lb pressure and 1-gal per min volume, loaded chutes can be positioned in less than 10 sec. Available in either 6- or 12-v systems, the DYNA-CHUTE combines pump, motor, valve, oil reservoir, and solenoid in one unit. Mounting is simple and can be completed in a minimum of time and of tools.—Monarch Road Machinery Co., 1331 Michigan St., N.E., Grand Rapids 6, Mich.



JEEP TRENCHER—Jeep-A-Trencher Gear-Draulic describes a gear-driven trencher with gears that run in oil. The unit is well forward in the Jeep body over the frame, and the center of gravity being placed ahead adds more weight on the front wheels, giving better traction, straighter trenches, and putting much less stress on the frame. Engine power is transmitted through a new gear drive connected to the Jeep center power take-off, supplying power to the digging ladder. The boom is raised and lowered hydraulically to any position in the 190-deg arc of travel. Weight of the trencher is approximately 1,750 lb. The Gear-Draulic will handle trench widths from 6 to 14 in. and depths up to 6 ft.—Auburn Machine Works, Inc., Auburn, Neb.

***"We solved
this problem
by eliminating
5 different oils"***



Here is the case of a large Pennsylvania contractor, so thoroughly mechanized that even his wheel-barrows were gasoline powered. And strangely enough, this intense mechanization was the root of the company's problem. Too many different types of oil were resulting in confusion and *misapplication*.

On one of his periodic visits, Sinclair Lubrication Engineer Harry Donovan was asked for his recommendations. Mr. Donovan reports, "It was plain that the perfect solution would be *one oil* suitable for heavy duty diesel, medium duty gasoline and light duty air-cooled engines.

Mr. Donovan continues, "I suggested SUPER TENOL®, knowing from previous experience that it would offer maximum protection against cold engine sludge in the lighter operations . . . and provide the necessary film strength and anti-oxidant qualities needed in the heavy duty diesel operations. The company accepted my recommendation and *eliminated 5 different oils*. Moreover, SUPER TENOL has prevented any further confusion or *misapplication of oil*."

SINCLAIR LUBRICANTS

Why not give a Sinclair Lubrication Engineer the chance to help solve your lubrication problems. *There's no obligation*. Contact your local Sinclair office or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.



You Have The World's Best Laboratory for Testing Hoists

Specifications are helpful guides in choosing the right hoist for your job. Factory tests give further assurance. But the hoists on your own job hold the key to your wisest final choice. These hoists have been tested in the world's best laboratory for your purposes. They have been operated by your men under your own exacting conditions. Their performance takes the guesswork out of choosing.

That's why Coffing Safety Pull Ratchet-Lever Hoists are standard on so many construction and maintenance jobs. Their record of durability and safety for more than 25 years under actual job conditions puts them in a class by themselves as the wise choice.

Examine the hoists in your "laboratory." Which is the oldest one in good working condition? When safety is vital, which hoist do your men use? We believe the answer is Coffing — the original ratchet-lever hoist. If you would like more information on the complete line of Coffing Ratchet-Lever hoists, write for catalog D11SP.



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Pullers • Spur-Gear Hoists
Differential Chain Hoists
Lead Binders
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PROFIT

from men and machines
...cut between-job travel time

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Tilt-Top!



This big, rugged trailer loads dozers, rollers and other cumbersome equipment in less than two minutes. Ground and platform merge into one surface ... for the easiest loading of heavy equipment you have ever tried. With Miller Tilt-Top just one man loads ... is off to the next job, with no lost motion. Miller's faster loading, quick maneuverability provides more time on the job, less time between jobs ... increases your profit from every operator, every machine every day.

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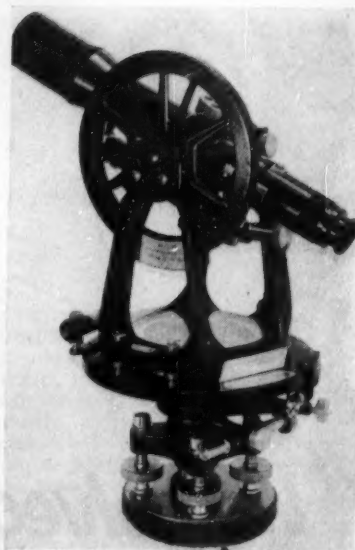
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Model "B" 10 ton \$1175*
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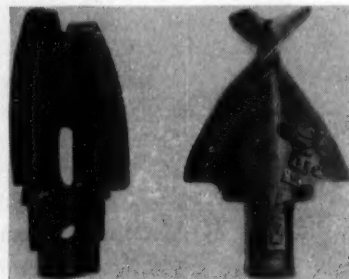
*Plus freight and Federal Tax.

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IMPORTED TRANSIT—A lightweight imported transit called the UMECO, Model 100 5-in. Survey Transit, weighs only 9 lb and is especially ideal for work in mountainous country and for contractors needing a precision instrument. The instrument has a 5-in. dia horizontal circle and a 4½-in. dia vertical circle. Both read to 30 min., and have verniers reading to 1 min. The 9-in. telescope has a 23-power magnification and is equipped with stadia lines at a fixed 1:100 ratio. It is priced at \$350.—**UMECO Optical Division, 465 California St., San Francisco, Calif.**



EARTH AUGER PILOT BITS—The Pengo combination fishtail-hardpan pilot and the Pengo cone pilot are designed for use in frozen ground. Both pilot bits have narrow fishtails that easily open up a small hole in hard surfaces into which the forward curve moldboards of wedge-shaped design spiral their way, breaking out the hardpan or frozen ground through which the center shaft of the auger may pass. The moldboards are positioned so as to deliver the spoil to both sides of the center shaft of the auger. It also is claimed that the forward curving of the moldboards, together with their spiraling position, make them self-sharpening.—**Petersen Engineering Co., Mfrs., Santa Clara, Calif.**

"nothing else comes close to it"



PAYLOADER tractor-shovel does many jobs on 7 million dollar building contract

VERNON C. NEAL, INC. of Pittsburgh, Pa. has over 7 million dollars of contracts in Columbus, Ohio involving 73 apartment houses and a large school. Speaking of their Model HM 4-wheel-drive "PAYLOADER" Supt. Allen says, "It is one machine that is paying for itself. We just work h... out of it. Nothing else can come close to it."

Pouring concrete into wall forms, as shown, the machine places 40 yards a day. Using a 20 foot boom, it also hoists concrete blocks to second-story construction. These are two of its special jobs in addition to its many applications with standard bucket. In use for over a year, it has had no "down time".

Whether you're a contractor or a public works official, a "PAYLOADER" tractor-shovel can

help you solve more earth-moving and material-handling problems than you can imagine. They've proven it in thousands of cases — they're proven by millions of hours of accumulated work time.

There's a size and model of "PAYLOADER" to fit *your* needs . . . bucket capacities from 12 cu. ft. to 2 cu. yd. — 4-wheel-drive types . . . front-wheel and rear-wheel drive types. Your Hough Distributor will be glad to demonstrate — see him today or write The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Illinois.



PAYLOADER®

THE FRANK G. HOUGH CO. • LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY





but also
significant

Loads like this have to be handled infrequently but when they are encountered they can't be permitted to stop operations.

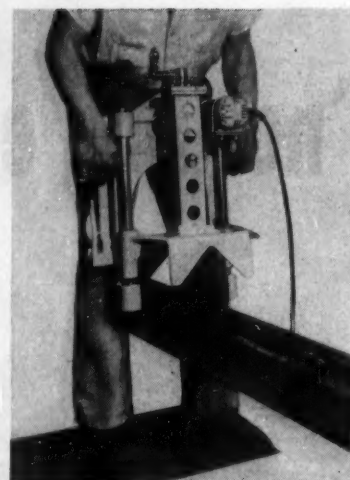
If it's an Owen Bucket you can handle such unusual, especially difficult loads without fear of damage to the bucket.

Long experience has taught Owen Engineers where to build in the extra strength in additional material or *special steel* to withstand the abuse to which all buckets are subjected occasionally. That's why they render service for uncommonly long periods with remarkably low repair and maintenance expense.

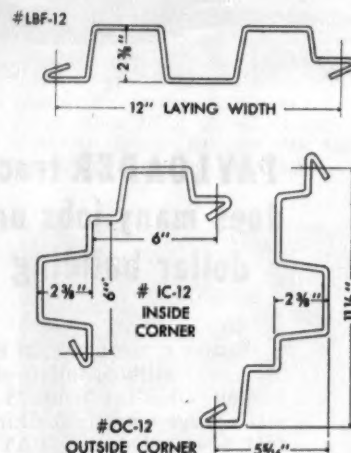
THE OWEN BUCKET CO.

6070 Breakwater Ave., Cleveland 2, Ohio

BRANCHES: NEW YORK, PHILADELPHIA, CHICAGO,
BERKELEY, CALIFORNIA, FT. LAUDERDALE, FLORIDA



PORTABLE PIPE SAW—This portable power pipe saw does on-the-job cutting of 2 to 8 in. cast iron and steel pipe, as well as bar and stock and beams. It weighs only 120 lb and operates in a space 25 in. wide. It is called the Wachs Guillotine Saw.—E. H. Wachs Co., 1525 N. Dayton St., Chicago 22, Ill.

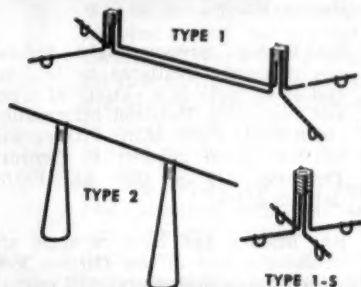


LIGHTWEIGHT PILING—A new interlocking steel sheet piling using high-strength box-type section, is available in two standard sections and in two gages. Marketed under the trade name L. B. Foster H. S. Lightweight Piling, it is recommended for installations, such as shore protection, pier protection, sewer trenches, building excavations, abutments, bulkheads, cut-off walls and cofferdams. It is being manufactured in 8- and 10-gage steel and in 12- and 15-in. laying widths. Comes in lengths up to 36 ft. The interlocking feature permits two sheets to be lapped together to form a watertight interlock. In many instances the piling can be placed without the use of a rig.—L. B. Foster Co., Pittsburgh, New York, Chicago, Houston, Los Angeles.

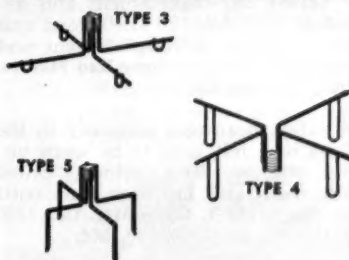
Only SUPERIOR Offers

Complete PLUS

PICK-UP INSERTS



ANCHORS for BRACES



BRACES

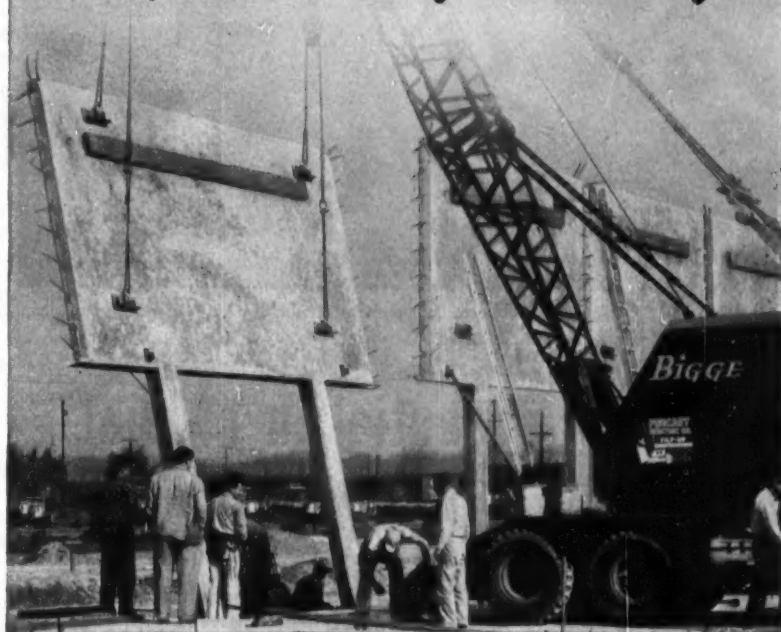


COMPLETE ENGINEERING SERVICE



Our recommendations will be given without charge or obligation on receipt of a set of plans.

TILT-UP ACCESSORIES Complete Engineering!



42,000 LB. PANEL being raised into position at United Grocers Warehouse, Fresno, Calif. Concrete panels are 8-inches thick with 12-ft. legs. SUPERIOR Pick-Up Inserts, Brace Anchors, and Braces were used. The exclusive pivoting action of the adjustable Braces permitted quick positioning and alignment of the panels. Contractor: Precast Erection Company, Niles, California.

Tilt—Lift—Position!—The proper type of Pick-Up Inserts and Brace Anchors and their location in the slab or precast structural member is of prime importance in order to withstand the stresses occurring when *tilting*, *lifting*, and *positioning*.

As pioneers in this field, SUPERIOR has developed various types of accessories and correct procedures and techniques resulting from the experience of thousands of job applications.

The many types of SUPERIOR Inserts, Anchors, and Braces for every job condition together with complete engineering service provide a combination which offers safe and efficient handling of any precast panel or structural member.

For details request a copy of Bulletin TU-2.

SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office

1775 Broadway, New York 19, N. Y.

Pacific Coast Plant

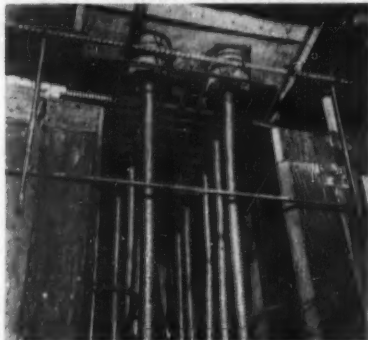
2100 Williams St., San Leandro, Calif.



VIBER VIBRATOR selected for concrete compaction in crucial area to produce maximum density at the point where concrete stress is critical.

Vibration essential in crucial area around prestressing cones

THE RICHFIELD OIL BUILDING ANNEX in Los Angeles is the largest monolithic prestressed concrete office building in the United States today. According to Albert C. Martin and Associates, architects and engineers on this project, prestressed construction was adopted because of design problems resulting from the matching of 10 foot 3 inch floor to floor heights in the existing building. With 8 feet the minimum clearance height, prestressing not only made possible the matching of the high velocity air conditioning ducts, and at the same time installation of recessed lighting, but



THE CONGESTION of prestressing cables and cones at the point of maximum load requires top performance from vibration equipment.

allowed a 46 foot clear span for flexibility in partitioning of office space. Because of the lack of room for erection equipment the new structure was cast in place.

- Concentration of load on the cable anchorage by stressed cables makes the area around the cones the most crucial area. Because patching of concrete in this area of cast-in-place prestressed concrete could scarcely be tolerated, consolidation of the concrete in this area is particularly important.

- Guy F. Atkinson Company, contractor, used Viber 1-5/16 and 1-3/4 inch diameter vibrators. Model E electric motor driven vibrator 1-3/4 inch diameter was used at the base of cone, or where spacing would allow, the 1-5/16 inch diameter Model 26 was used between cones as well as at the base of cone.

For further information on Viber's complete line of internal and external vibrators, contact your authorized distributor or Viber Company, Dept. 68, 726 South Flower Street, Burbank, California.



CONCRETE VIBRATORS SINCE 1931

EQUIPMENT BRIEFS

Caterpillar motor graders, No. 12 and 112, are now being produced with several improvements. The No. 12 has had the horsepower boosted to 115 and the speeds increased to 4 mph in 2nd gear and 21.5 in 6th gear. Both the No. 12 and No. 112 have convenient one lever from-the-seat starting. A new throttle on both machines is a free-moving non-ratchet type. The instrument panel is located in the cab for better operator visibility.—Caterpillar Tractor Co., Peoria, Ill.

Self-flaring, pressure-tight fittings are currently available in ¼-, ⅜- and ½-in. sizes in a variety of types and materials. Detailed information about these Flare-Matic fittings will be sent upon request to Century Products, 315 S. 15th St., Philadelphia 2, Pa.

Reo Motors, Inc. have recently announced a pair of low friction V-8s which the company says will outpull and outrun anything on the road today. Larger of the two engines has a 441-cu. in. displacement and develops 220 brake hp. The second unit has a 390-cu. in. displacement and produces 195 gross hp.—Reo Motors, Inc., Lansing 20, Mich.

A safety headwear accessory in the form of a felt liner to be worn under the worker's helmet, called "Head-O-Gard" has been announced by the Louis A. Gann Mfg. Co., 1300 Light St., Baltimore 30, Md.

Now in production by the Shawnee Mfg. Co., 1947 N. Topeka Blvd., Topeka, Kan., are two new heavy-duty loaders, one called the Loadmaster for large tractors and the Special for smaller tractors. Both models are of all-welded construction and feature a two-pin installation for removal. The Loadmaster loader was made for the Fordson Major Diesel tractor, whereas the basic design on the Special has been completed for all the Ford and Ferguson tractor models.

Improvements recently effected in the cylinder assembly of General Motors Series 71 diesel engines have been designed to provide greater fuel economy, increased horsepower in some sizes and longer life for these power plants in all types of industrial, construction and earthmoving equipment. Improvements listed are a new cylinder liner, a new piston, with both liners and pistons interchangeable with those formerly used. An illustrated booklet titled The Inside Story fully describes the completely new Series 71 Cylinder engines. You can get a copy from Detroit Diesel Engine Division, 13400 W. Outer Drive, Detroit 28, Mich.

HERE'S HOW THE BLAW-KNOX "Complete Paving Package" LICKS RISING PRODUCTION COSTS

● You get the most efficient concrete paving outfit available, because every piece of "Complete Package" equipment is built by one responsible, experienced manufacturer, with each unit engineered to match the others in size, capacity and performance.

● You have the advantage of one nation-wide distributor source for prompt parts and maintenance service . . . you get preventive maintenance when all your equipment belongs to one family. It's standard practice for your Blaw-Knox trained service man to check each "Package" unit on each service call, to stop trouble before it starts.

● You can get all your equipment on one order, in one shipment, with one financial contact . . . or you can start with a "Minimum Package" to fit your particular job, then buy additional units as your needs increase and your profits grow.

● Various combinations of your "Package" units handle a wide variety of jobs. Use your aggregate and cement batching plants with Blaw-Knox Concrete Buckets for big engineered construction jobs, or add Hi-Boy Trukmixers for ready-mix operations. With a Blaw-Knox "Complete Package" you're ready to handle any concrete paving or concrete construction contract!

CLAMSHELL BUCKETS



AGGREGATE
AND CEMENT
BATCHING
PLANTS



PRECISION SUBGRADERS



MULTIFOOTE PAVERS

SPREADER-VIBRATORS

FINISHERS

PAVING FORMS

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
PITTSBURGH 38, PA.
Offices in Principal Cities

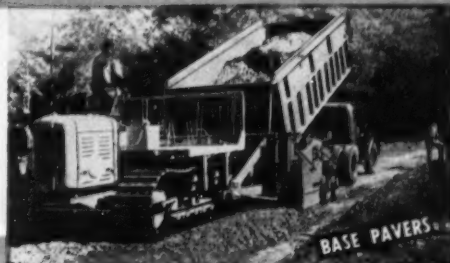
BLAW-KNOX

BLAW-KNOX

Ask your Blaw-Knox distributor about the
BLAW-KNOX "COMPLETE PACKAGE" SYSTEM for

- Paving and Widening Highways, Streets, Runways
- Paving Base Course
- For Ready-Mix Operations

Each Blaw-Knox "Package" is engineered for your specific job to give you big-profit production with low maintenance and operating costs.



BASE PAVERS



Light hand ram and adjustable frame mark...

One-Shot Pipe Bender



BENT CONDUIT presents a smooth, unbroken appearance when the job is completed. The versatility of the Tal Bender is well illustrated on this completed Milwaukee project.

USING THE ONE-SHOT Tal Pipe Bender to bend thin wall and rigid conduit on the Milwaukee Vocational School project, Magaw Electric Co. of Milwaukee, Wis. saved an estimated \$438.56 in materials and 427 1/3 hr in time, plus the labor cost represented in the hours saved.

By using the handy bender, this contractor made 621 bends up to 90 deg in both types of conduit, eliminating costly elbows and couplings.

The contractor also claims an estimated additional saving of 50 hr by making 45-deg bends and offsets with bends down to 10 deg.

The Tal Bender consists of a small hydraulic ram built into a light framework which does the bending job quickly and accurately in one operation. The framework has adjustable corner formers to accommodate various sizes of conduit. An assortment of half-circle forming shoes is provided to fit each size of conduit. The design of the half-circle shoes together with the extra long ram of the hydraulic unit makes possible bends up to 180 deg. The ram is hand-pumped. An indicator shows amount of bend.



WELDERS ALWAYS ASK:

**"But is it
as good as
a Lincoln
'Shield-Arc?'"**



HERE'S WHY the Lincoln "Shield-Arc" welder is *the standard of comparison* for arc welders:

- 1** "Shield-Arc" delivers *any* type of direct current arc . . . not one or two types.
- 2** "Shield-Arc" delivers dependable peak performance day after day . . . at lowest cost.
- 3** "Shield-Arc" welders are constantly improved to weld faster . . . at lower and lower costs.

LINCOLN "SHIELD-ARC" SA-200 DC

Engine driven welder. "Shield-Arc" is built in 200, 300, 400, 600 amp sizes, portable or stationary.

GET LATEST FACTS



on cutting your welding costs. Send for Bulletin 1337, available by writing on your letterhead to:



THE LINCOLN ELECTRIC COMPANY

Dept. 2708

CLEVELAND 17, OHIO

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

SPEEDS CONSTRUCTION CUTS COSTS



Fig. 1. Saves \$18,000 welding column bars at Peninsula Hospital, Burlingame, California. Eliminates 21 pounds of steel per joint, floor area increased.



Fig. 2. Cuts Steel Costs 15% on 1700 ton multi-story framework. Continuous beams pass over columns and are welded at point of minimum stress rather than at column.



Fig. 3. Speeds Erection on 575 ton frame addition to St. Vincent's Hospital. Structural members are held together with clip angles, bolted and guyed, then field welded.



FOR A MOBILE EMERGENCY RIG

WHEN machinery, trucks or tractors get mired, stuck or submerged valuable equipment is idle or endangered . . . and that costs money. With a tractor-mounted Carco winch on the job you can move to the trouble speedily. The added "reach" of the Carco winch line lets you get to the equipment to be rescued. And the rugged pulling power of the Carco winch . . . double the drawbar pull of the tractor itself . . . does the rest of the job. Carco winches are engineered for rough, tough work . . . long wearing, constant mesh gear trains transmit tractor power efficiently . . . brakes hold firm . . . concealed cable controls eliminate exposed levers and rods. See your nearest Carco dealer. PACIFIC CAR AND FOUNDRY COMPANY, Renton, Wash. Branches at Portland, Ore., and Franklin Park, Ill.



Free filtration survey for operators of construction equipment is being offered free by the **WIX Corporation** of Gastonia, N. C., as an introduction to its Engineered Filtration program. The survey of filtration shows the needs covering all trucks, earthmovers, stationary engines, and other filter-equipped engines. It is conducted by a trained filter specialist who checks every piece of mobile or stationary equipment, noting vehicle number, make and type of vehicle or engine, oil filter type, and the correct replacement cartridge for each filter. All this information is then placed on a permanent Record Form and returned to the contractor's maintenance superintendent.

Disk-type emergency brakes, widely used as standard equipment on trucks and buses, are now being installed on tractor loaders manufactured by the **Elmco Corp.** of Salt Lake City. The brakes, known as **Tru-Stop** are used on the tracks and on the bucket-operating mechanism. —**American Chain & Cable Co., Inc.**, 929 Connecticut Ave., Bridgeport 2, Conn.

An important feature on the new 150 wheel-type **Trenchliner** developed by the **Parsons Co.** of Newton, Iowa, is a hydraulic control on the digging wheel. Digging wheel travels up and down a vertical mast, and a hydraulic ram raises and lowers the wheels holding close grade tolerance at any depth. The **Trenchliner** will produce from 12 in. to 25 lin ft of trench per min. Has a digging capacity of 5 3/4 ft deep and 16 to 26 in. wide.

A new lightweight flexible plastic pipe has been developed by **Quaker Rubber Corp.**, Philadelphia 24, Pa. Called the Series 200, it is made of 100% virgin polyethylene resin and is guaranteed to be non-toxic. It is used for cold-water systems, farm piping, sewerage and waste, water service lines, and for conveying industrial chemicals and gases.

A powerful, new **International Royal Red Diamond 501** engine is now available on 12-, 4- and 6-wheel chassis, ranging upward from 30,000 lb. GVW, and three heavy-duty fire truck models, according to **International Harvester Co.**, Chicago 1, Ill.

In operations where economical power is desired to replace slow and tedious hand lift, the new **Jarp PumpPac** electric power hydraulic unit fills this requirement. It consists of a compact, simple package of pump, oil reservoir and valve which, when connected to any 6- or 12-v battery, develops a variable range of pump pressure from 2,000 to 5,000 lb. psi. Manufactured by: **Jarp Corp.**, Wausau, Wis.

CM CYCLONE

HIGH SPEED HEAVY DUTY CHAIN HOIST



CAPACITIES
1/4 TO
10 TONS

EASIER TO HANDLE

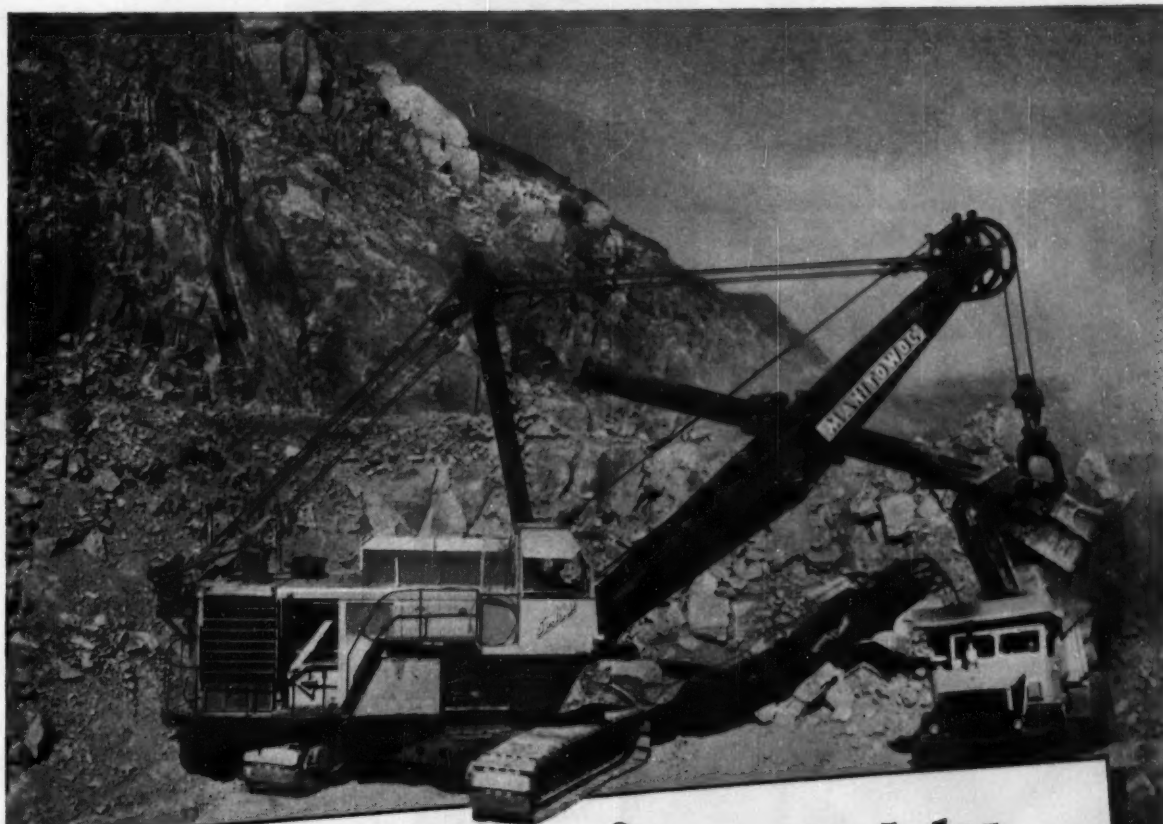
● The most efficient hoist of its type ever built. Light weight aluminum alloy construction. 1 ton model weighs only 35 lbs. Sealed in lifetime lubrication. 42% fewer parts. Equipped with famous **HERC-ALLOY** flexible welded steel load chain. Compact, simple construction. Thousands in use wherever there is lifting to be done.

SEND for Bulletin 145, prices and name of your local distributor.



CHISHOLM-MOORE HOIST DIVISION

COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
DISTRICT OFFICES: NEW YORK, CHICAGO, CLEVELAND
In Canada: McKinnon Columbus Chain Limited, St. Catharines, Ont.



***NOTHING STOPS* a mighty Manitowoc 4500!**

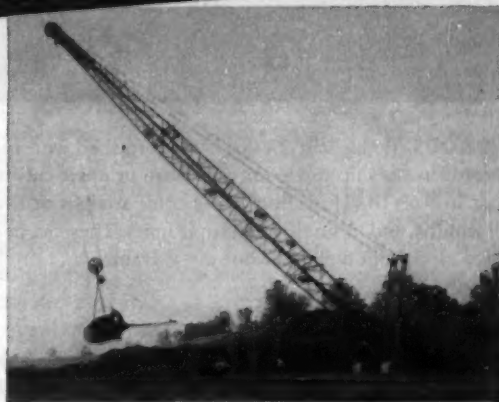
Not even this solid mass of rugged rock can stop a powerful Manitowoc 4500! Yard after yard—load after load—this mighty of the mightiest keeps right on smashing out a broad path for a railroad near Cheyenne, Wyoming.

It can't be beat as a shovel — handles up to 5½ yards of rock like a handful of peanuts. Single, free-turning tubular stick rolls through saddle and makes digging shocks harmless. Complete diesel operation permits traveling anywhere without a trailing cable or electric supply.

It can't be beat as a dragline—it's "steady as she goes", with a low center of gravity; wide, long crawlers—providing maximum stability for long reaching booms—features that mean full capacity buckets on every dragline job.

The 4500 main machinery is simple, powerful and fast, with only 15 gears and 8 sprockets—no lost motion—less maintenance and easy to service. All these advantages, plus the added power and performance of Manitowoc Torque Converter application.

See and get the facts on Manitowoc before you buy your next shovel or dragline.



4500 Dragline with 140' boom and 5 yard bucket building levee near Chester, Illinois.

MANITOWOC

SHOVELS
1-5 YD.

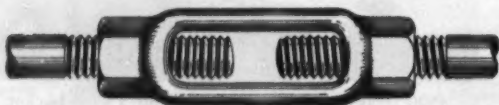
Special Line

CRANES
18-100 TON

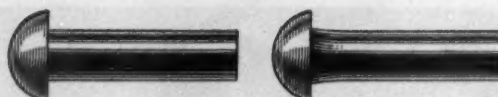
THESE CONSTRUCTION FASTENERS WILL DO THE JOB



TIE-RODS. Bethlehem Tie-Rods are furnished with rolled-threads in sizes up to 1½ in.; also plain or upset cut-thread rods in sizes to 4½ in. Both types come straight or bent in all lengths, and in single or multiple units. They can be supplied asphaltum-dipped or hot-dip galvanized.

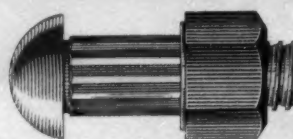


TURNBUCKLES: Come in all diameters from ¾ in. to 2½ in., with 6-in. openings between heads. Furnished with right- or left-hand threads, with or without stub ends.

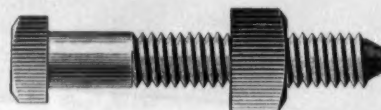


RIVETS. Bethlehem rivets come in two types, small and large. Small rivets come in diameters ¼ in. and smaller, and in lengths 6 in. and shorter. Button, cone, countersunk, pan and flat heads.

Large rivets are furnished in sizes from ½ in. to 1¾ in., and in lengths 2 in. and longer, in steps of ⅛ in. Button, high-button, countersunk, round-top countersunk, cone and pan heads. Also swell neck.



DARDELET RIVET-BOLTS. For structural work in which rivets or fitted bolts might normally be used. When driven home, the oversize ribs deform to wedge themselves into hole. Self-locking thread locks nut against vibration and shock, assuring permanently tight joints. Regularly furnished with button heads, though countersunk and special heads can also be supplied.



FITTING-UP BOLTS. Made in three types:

1. 70,000 lb, low carbon, untreated
2. BS-B8, medium carbon, heat-treated
3. BS-B9, medium carbon, heat-treated

Furnished with American Standard Regular Unfinished Square Heads, Plain Necks, Semi-Cone Points and American National Coarse Threads. Also made with 60 deg Modified Acme Thread.



PLYWOOD BOLTS. The spiral under the head is reversed against threads, making water-tight joint. Have 50 pct more bearing surface under head than same size carriage bolt. Retard dry rot. Flat head provides a flush surface which does not damage wood.

In addition to the items listed here, Bethlehem manufactures many other types of construction fasteners, including high-strength bolts meeting the requirements of ASTM Spec. A-325. The nearest Bethlehem office will be pleased to supply full information.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM BOLTS ARE GOOD BOLTS



New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

CONCRETE MIXER—A specification sheet for the Blue Brute 6-S Concrete Mixer gives condensed specs of the mixer, as well as standard and optional equipment available. You can get a copy of this single sheet by writing to **Worthington Corp., Harrison, N. J.**, and specifying Bulletin 1240-S4.

STEEL SHORING—A bulletin entitled "Modern Shoring for Concrete Construction" which describes three types of steel shoring equipment for concrete shoring jobs has just been issued by **The Patent Scaffolding Co., Inc., 38-21 12th St., Long Island City 1, New York.**

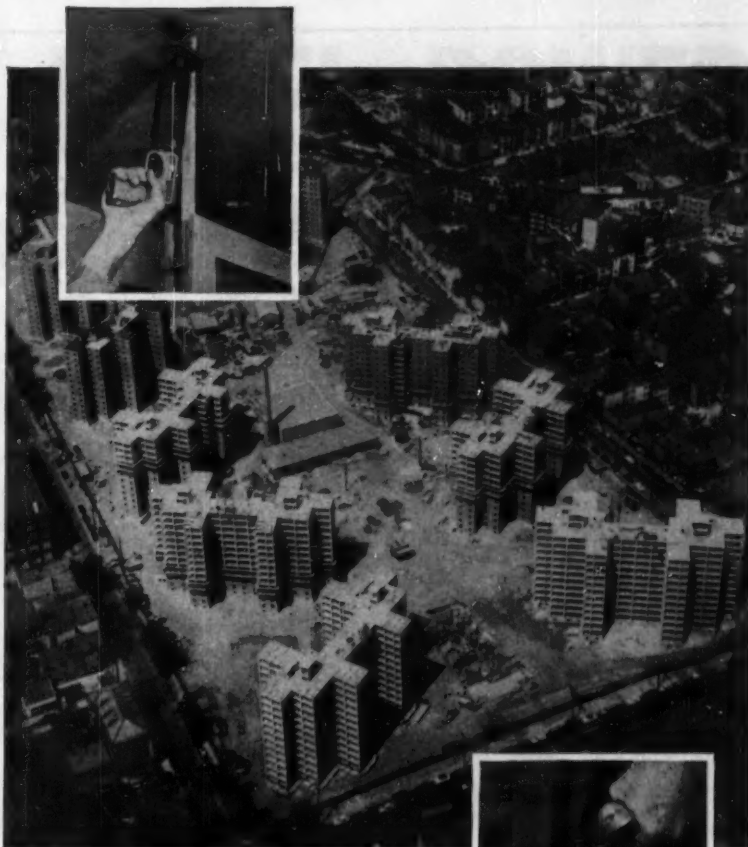
HOSE—A new hose catalog that shows construction details and illustrations of a line of fire and suction hose, extinguisher tubing, and fire-hose couplings is available from the **Boston Woven Hose & Rubber Co., P. O. Box 1071, Boston 3, Mass.**

MOBILE ELECTRIC PLANTS—Many interesting mobile installations of Onan Electric Plants and Engines are described in a special issue of "Power Points Digest," recently published by **D. W. Onan & Sons, Inc., Minneapolis, Minn.** It is available without charge.

MASONRY SAW—A new piece of literature which describes the firm's complete line of masonry saw equipment may be obtained by writing **Construction Machinery Sales Co., Waterloo, Iowa.**

WASHINGTON CRANES—A 24-p catalog No. CCD-54 is now available, which describes the revolving, barge, hammerhead, level luffing cranes, cableways and derricks manufactured by the **Washington Iron Works, 1500 Sixth Ave., South, Seattle 4, Wash.**

MASONRY DRILLS—This manufacturer has issued a booklet entitled "What and How" that takes the guesswork out of the problem of using the right kind of a bit in the right kind of a drill to make a proper hole in any kind of masonry. This manual gives information on drilling soft, medium, hard or extremely hard masonry. It is one of the most complete masonry drilling manuals yet published and can be obtained by writing to the **New England Carbide Tool Co., Inc., 60 Brookline St., Cambridge 39, Mass.**



Ramset makes fast work of installing 10,000 doors

Speed and economy resulted from the use of RAMSET SYSTEM to anchor 10,000 interior doors top and bottom in the low-rent housing project at Newark, N. J.

The struts and frames were guided into proper position, and anchored to the poured concrete ceiling and floor with a RAMSET JOBMASTER Fastening Tool and Tru-Set Fasteners. Less than a minute was required to provide a firm anchor.

Similarly, high-speed, low-cost RAMSET SYSTEM will solidly fasten almost anything into even the hardest concrete or mild structural steel up to 1" thick. Ask your RAMSET dealer to demonstrate how this most modern method will reduce costs and complete the work faster. Or, write us, for details in *Specification Manual*.

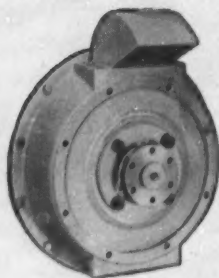
Ramset Fasteners, Inc. Ramset Division,
Olin Industries, Inc.
12103 BERE A ROAD • CLEVELAND 11, OHIO

FIRST IN POWDER ACTUATED FASTENING



Modernize when you re-power!

FUNK TORQUE CONVERTERS



Extend the life of your engines, prevent stalls, eliminate damaging shock loads—install FUNK Torque Converters. Compact, short-coupled units. Fit SAE fly-wheel housings. Standard flanges easily adapt gear reductions, right angle drives or transmissions. Send us your power problem and our engineers will gladly recommend a suitable unit. Price a Funk before you buy.



A Diversified Line of Low-Cost Units Economically Adapted to Your Power Needs.

WRITE FOR CATALOG



FUNK AIRCRAFT CO.

3303 AIRPORT DRIVE
COFFEYVILLE, KANSAS

FUNK *combo* power UNITS

TORQUE CONVERTERS
GEAR REDUCTIONS
POWER TAKE-OFFS

RIGHT ANGLE DRIVES
POWER ACCUMULATORS

Any Way You Figure It...

**STERLINGS
COST LESS PER YEAR**



"I CARRY 80% OF THE LOAD"

You want to reduce your material transport costs? You can do it easily with Sterling Wheelbarrows. They are engineered and built for the tough jobs. All steel . . . all welded . . . no rivets . . . barrows so ruggedly constructed, they seem to last forever. The unusually long service life of Sterling Wheelbarrows protects your initial investment. And maintenance costs are almost nil. Compared to other barrows, Sterlings actually cost less per year. Get the facts. Write for catalog.

IMMEDIATE SHIPMENT

DEALERS: Ask about our liberal dealer selling plan.

Costs Less per Year

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling
WHEELBARROWS



Look for this Mark of
STERLING Quality

ATHEY WAGON — A 6-p folder (PR-1014) which shows how the Athey PR21 rear-dump wagon of 22.5-cu yd capacity works with the Caterpillar DW21 is now available from the Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill.

PRESTRESSED CONSTRUCTION—

This Preload pamphlet describes the licensing program for prestressed construction which The Preload Company, Inc. will grant to selected licensees throughout the country. Under this program the licensee can take advantage of more than 50 U. S. patents or patent applications owned or controlled by Preload which relate to prestressing. You can obtain all the information you desire by requesting a copy of this booklet from **The Preload Co., Inc.**, 211 E. 37th St., New York 16, N. Y.

BUCYRUS-ERIE LITERATURE —

Bucyrus-Erie has just released a general catalog (Form GC-5A) which features the company's complete line of excavating, drilling and material-handling equipment and also a pocket-size pamphlet which describes the truck-mounted, all-hydraulic Hydrocrane. Both of these booklets can be obtained by writing to **Bucyrus-Erie Co.**, South Milwaukee, Wis.

CARRIER HOIST—

A folder featuring the advantages of the Big Ben fifth wheel carrier hoist which shows how this 15,000-lb. hydraulic lift is attached and operated for recovery of disabled trucks has been prepared by the **H. S. Watson Co.**, 1316 67th St., Emeryville, Calif.

HYDRAULIC COMPONENTS—

Motors, gear-type pumps, valves, cylinders and valve and pump combinations for up to 1000 p.s.i. working pressure are pictured and described in a catalog just released by **Wisconsin Hydraulics, Inc.**, 3165 North 30 Street, Milwaukee 16, Wisconsin.

AIR-ACTUATED CLUTCH —

The Twin Disc Clutch Company, Racine, Wisconsin, has just published Bulletin No. 304 which covers the Twin Disc Model PO Air-Actuated Clutch. This clutch is used on all types of equipment in the oil fields, cranes and shovels, presses and brakes, hoists, and paper mill drives. Sizes available are from 14 in. through 36 in. with torque capacities to 120,000 lb.-ft.

LIGHT DUTY HOISTS—

A bulletin form H-54 describes the models J-8 and J-15 O.K. hoists which have recently been developed by the O. K. Machinery Division of the John C. Motter Printing Press Company, Columbia, Pa. The J-8 model has a standard line speed and load capacity of 125 ft per minute at 1300 lb and the J-15, 150 ft. per minute at 2000 lb.

MURPHY DIESEL POWER

all the way on this job...

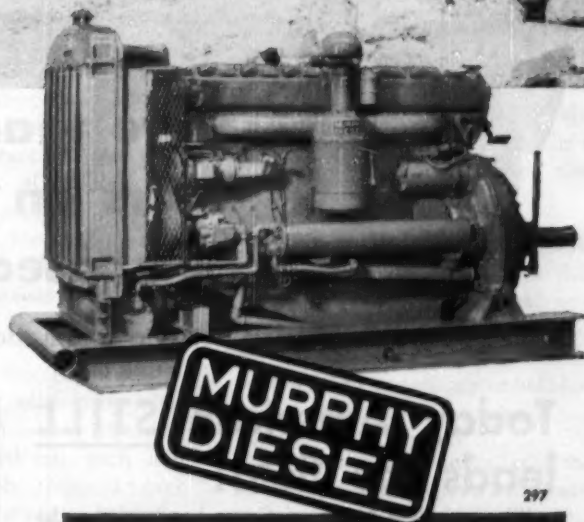


... turns out over 100 tons of limestone and flint rock per hour

● From this Kansas pit, W. O. Homer of Junction City, Kansas, is turning out 100 tons of limestone and flint per hour, with flint accounting for about 20% of the total. Mr. Homer is doing this job with a Murphy Diesel powered Northwest shovel and a Murphy Diesel powered Universal portable crushing plant. So it's Murphy Diesel all the way on this job.

If you're looking for dependable output at maximum operating economy, profit by the experience of pit and quarry operators everywhere, and put Murphy Diesel power to work for you. It's your best bet for getting the most rock per gallon of fuel and you'll particularly like the trouble-free service and freedom from costly downtime.

Talk over your requirements with your Murphy Diesel Dealer and ask him to show you what Murphy Diesel power can do for you.



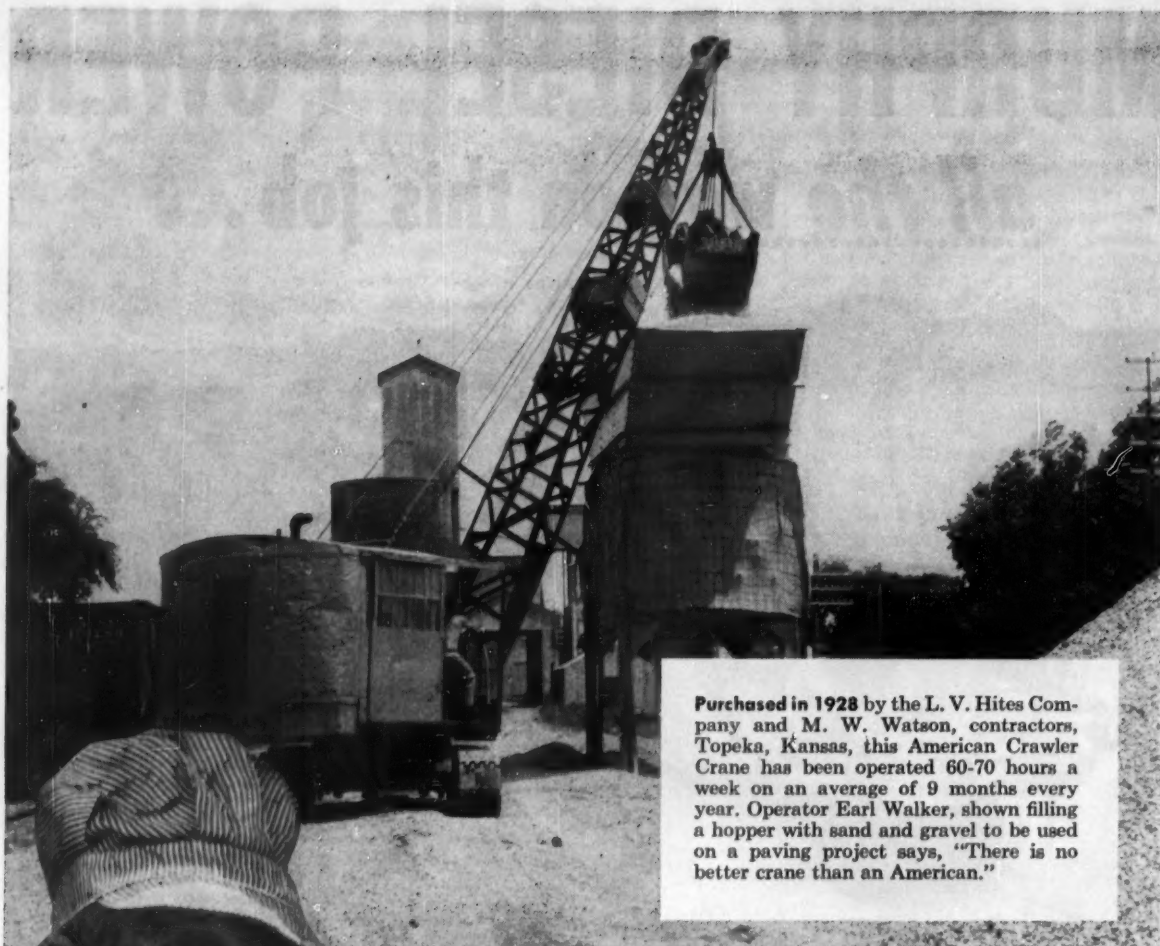
297

MURPHY DIESEL COMPANY

5339 W. Burnham Street
Milwaukee 14, Wisconsin
Sales, parts, service throughout the nation

Heavy duty power
for construction

Murphy Diesel Engines and Power Units for construction, 90 to 240 H.P., 1200 and 1400 RPM. Generator Sets, 60 to 154 K.W.



Purchased in 1928 by the L. V. Hites Company and M. W. Watson, contractors, Topeka, Kansas, this American Crawler Crane has been operated 60-70 hours a week on an average of 9 months every year. Operator Earl Walker, shown filling a hopper with sand and gravel to be used on a paving project says, "There is no better crane than an American."

More than 60,000 production hours on an American Crane purchased in 1928

"And there is no better crane made," says veteran Kansas operator.

Today American STILL leads the field!

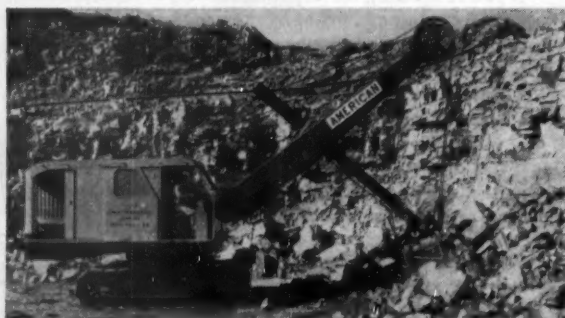
Whether your American Crane has been on the job for 26 years or was just delivered, it adds extra profit-production hours to the day. It delivers big capacity and fast, smooth operation with less maintenance required than anything else in the field.

Compare the American Cranes, feature by feature, with any other crane. They are built by a company with $\frac{3}{4}$ of a century experience in manufacturing the finest hoisting equipment.

American Hoist

American Hoist & Derrick Co.

St. Paul, Minn.



Today's Leader. The American 700 Series . . . 50-ton Lifting Crane . . . 1 $\frac{1}{2}$ yard rock shovel and backhoe . . . 2 yards as a clamshell or dragline. The newest member of the American line.

BACKFILLER—The Cleveland Model 190 Backfiller, a heavy-duty machine for use on pipe lines and similar heavy-construction projects, is the subject of a 6-p. descriptive bulletin. The form includes complete dimensional drawings and specifications and is identified as Bulletin S-118. You can get copies by writing the Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio

HYDRAULIC SPROCKET PULLERS—A new manual SP-54 which describes and illustrates portable hydraulic sprocket puller and installing sets in both 50- and 100-ton capacities is now available from your nearest OT distributor or from the Owatonna Tool Co., 380 N. Cedar St., Owatonna, Minn.

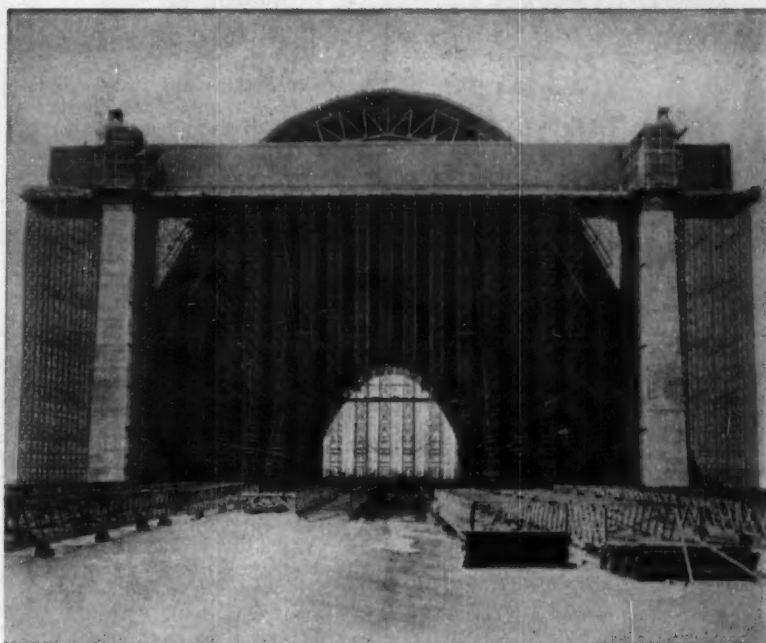
ASPHALT ROAD PAVING—A new brochure titled PAVE gives detailed information on a recent major technological development in bonding additives for asphalt road paving. It includes comparative test data on additive heat stability in asphalt and is being made available for the first time to contractors and asphalt producers. You can get a copy of this brochure by writing to—Carlisle Chemical Works, Inc., Reading, Ohio.

ANTI-RUST PAINT—A single catalog sheet which describes Rustrem anti-rust paint is available by writing Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio.

GALION MOTOR GRADER—If you are interested in an extra heavy-duty grader of the 115-125-hp. class, you will be glad to look at Galion's new catalog on their Model 118 motor grader. Catalog No. 395 gives all the facts and descriptions of this grader, and you can obtain a copy by writing the Galion Iron Works Mfg. Co., Galion, Ohio.

WIRE ROPE—The Bergen Wire Rope Co. of Lodi, N. J. A new folder describing many types of Bergen specified wire rope for various construction, contracting and industrial uses includes cross-sectional diagrams of different type wire rope with technical information on breaking strength, flexibility, resistance to abrasion and performance under extreme conditions. Copies of this folder are available without charge.—The Bergen Wire Rope Co., Lodi, N. J.

9 PROFITS—How contractors can increase productivity of new or used tractors by adding the right attachments is described in an illustrated booklet titled "9 Profitable Minutes for Contractors." This booklet contains cost- and time-saving ideas taken from actual case studies. It is free and can be obtained from the Hyster Co., 2902 N. E. Clackamas St., Portland 8, Ore.



Serving as shoring, these 50 towers made up from standard Safway scaffolding support loads of 20 tons each.

U. S. Navy Builds a Hangar!

50 Towers of Tubular Steel Made Up from Standard Safway Scaffolding Speed Construction

On one of the world's largest scaffolding jobs — this lighter-than-air hangar for the United States Navy on the East coast—Safway all-steel scaffolding was used exclusively in speeding construction. An estimated 92 miles of tubular steel make up the 50 scaffolding towers used as shoring. Since each tower supported 20 tons of weight, each scaffold leg sustained a load of about 3000 lbs.

To allow easy lowering and dismantling of the scaffolding after the work was finished, adjusting screws were used on each end frame. The job required over 8400 standard Safway end frames.

BUILT-IN SAFETY FEATURES

Safway design gains its strength from trouble-free wing nuts that solidly hold carbon steel tubular cross braces to end frames. Cross braces pivot on hardened steel Hi-Shear rivets.

Making the most out of tubular steel is standard Safway practice. That's why you gain substantial savings in operating costs by using Safway scaffolding . . . a fact well supported by experience of builders and contractors everywhere.

It'll pay you to investigate the advantages of America's safest and most popular scaffolding.

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- Ready for use right out of the case. Highest precision leveling with coincidence spirit level and tilting screw. Coated optics give increased brilliance and contrast in the image.

Ask for detailed Brochure NK527H-1

**SERVICE DEPARTMENT
FACTORY TRAINED PERSONNEL**



AIR COMPRESSORS—Bulletin No. 125 representing three distinct types of air compressors, described in complete detail with specifications and recommendations has just been released by Schramm, Inc. The types are Pneumapower, the self-propelled Pneumatractor and Unistage models. Each unit covers a definite need and, according to the manufacturer, represents simplified design, fewer parts and fuel savings up to 50%. Write to Schramm, Inc., Dept. ADM, West Chester, Pa.

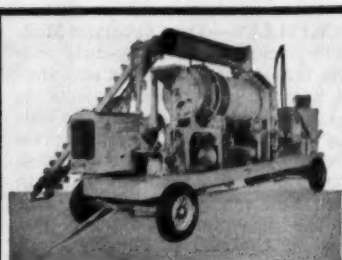
CRAWLER-MOUNTED GRADALL—A factual 4-p. folder covering the most recent addition to the Gradall line, the crawler-mounted model shows how this machine is driven and maneuvered with hydraulic power, covers the controls for the machine and gives its working ranges in chart form. You can get copies of this folder and complete specs by writing to The Gradall Div., The Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio

BITUMINOUS PLANT—The medium-sized Model 81 continuous mix bituminous plant is completely described in a new 8-p. folder, Form No. 653. The book is well illustrated and also contains a 3-p. cut-away and detailed account of the flow of the material through the plant. You can get this one by writing directly to the Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn.

LUBRICATION—"Proper Lubrication, the Life Blood of All Machinery," is the title of a new 36-p. booklet on the important subject of modern lubrication. Covers all types of industries and gives recommendations as to types of lubricants that should be used on various pieces of equipment. A copy will be furnished free to those interested by placing your request on your company letterhead addressed to Lubriplate Div., Flske Bros. Refining Co., 129 Lockwood St., Newark 5, N. J.

PORTABLE FINISHING MACHINES—Here's a well-illustrated 16-p. booklet that vividly depicts Flex-Plane's Detroit Special at work on turnpikes, air strips, etc. It explains why this machine is highly portable, easily adjustable, and gives workmanlike finished results. Ask for Bulletin P-111.—The Flexible Road Joint Machine Co., Warren, Ohio

RATCHET-LEVER HOIST—A bulletin describing the entire line of ratchet lever hoists, including both roller- and coil-chain models with capacities ranging from $\frac{3}{4}$ to 15 tons is contained in Bulletin SP available by writing the Coffing Hoist Co., Danville, Ill.



ASPHALT PLANTS

Complete units for maintenance and moderate contract paving. Sizes—4, 8, 15, 30 tons per hour.

Other Products

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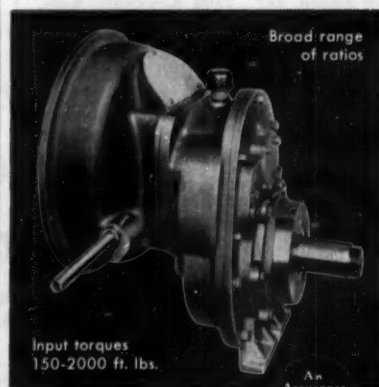
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- Mechanical Drives for Torque Converters

Cotta Transmission Co., Rockford, Illinois

COTTA
HEAVY-DUTY
TRANSMISSIONS

"Engineered-to-order"



HOW THE MAIN FRAME CONTRIBUTES TO TOP TRACTOR PERFORMANCE

One of the big reasons why more and more Allis-Chalmers tractors are being used today is their exclusive main frame design.

These frames are one-piece, all-steel welded structural members (like the girders in a bridge or the columns in a building). They help provide greater strength and flexibility to withstand shock loads . . . make possible better equipment mounting, improved weight distribution and outstanding service simplicity as well.

We invite you to see these advantages . . . first at your nearby Allis-Chalmers dealer . . . and then in a demonstration.

"ROLLS WITH THE PUNCH" — All-steel main frame flexes slightly under extreme shock loads . . . without transmitting strain to engine, clutch or transmission.

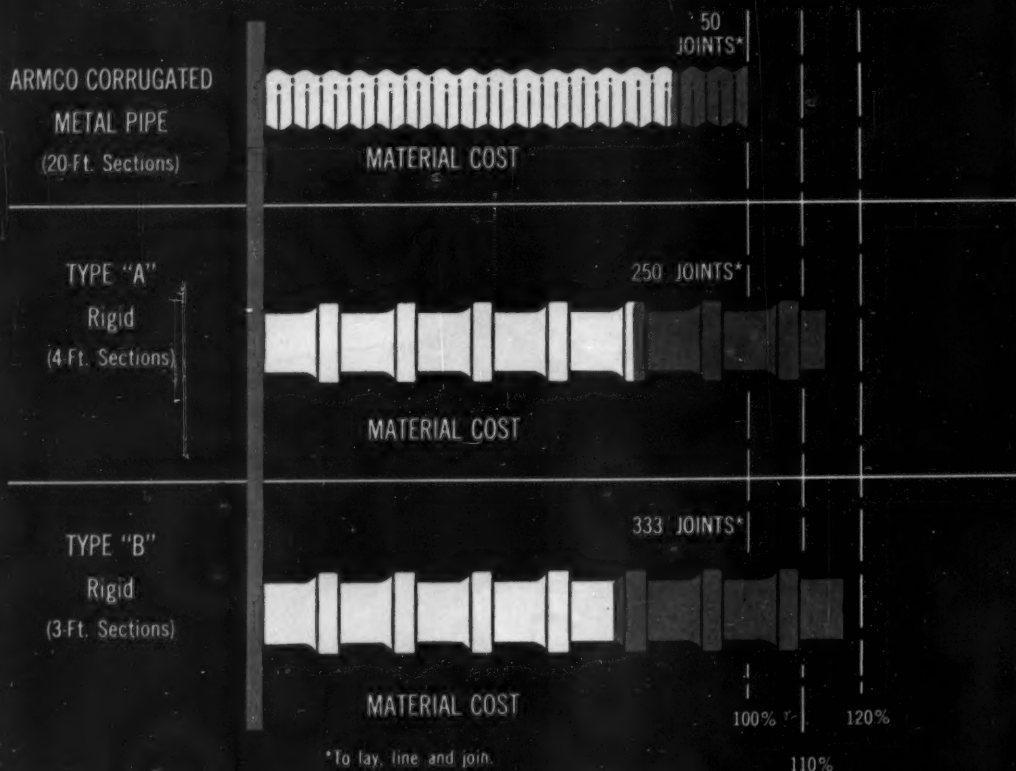
BETTER EQUIPMENT MOUNTING — This frame's compactness provides ample clearance for equipment like front-end shovels . . . permits wide track shoes . . . improves performance of entire unit.

IMPROVED WEIGHT DISTRIBUTION — Box A-frame allows location of main components for best over-all balance . . . putting more weight lower in tractor where it does the most good.

SERVICE SIMPLICITY — Since main frame carries structural load, power drive components can be readily removed, repaired or replaced without disturbing adjacent parts.

ALLIS-CHALMERS
TRACTOR DIVISION—MILWAUKEE 1, U.S.A.

RELATIVE INSTALLED COST PER 1000 FEET



How do
YOU figure
drainage
jobs?

It's the *installed* cost that counts! And that is where Armco Corrugated Metal Pipe saves you time and money. It permits lower bids while you retain ample profit. Here's why. Long sections of Armco Pipe, compared to short-section rigid pipe, reduce the number of joints required by 80 per cent or more. There are fewer sections to lay, line and join with no delay for curing. Handling is easier. And thanks to the strength of corrugated metal, there is less chance for breakage. No wonder you can speed the job and save money in the bargain. Armco Corrugated Metal Pipe is supplied in diameters from 8 to 96 inches. Lengths range up to 24 feet. Bituminous coatings or ASBESTOS-BONDED Pipe protect against severe corrosion. Write for illustrated catalog. Armco Drainage & Metal Products, Inc., 1454 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES



NEW HOIST CHART—The first chart of its type in the industry, a Hoist Classification Chart, published to provide a means of standardizing capacity ratings and a convenient method of comparison of hoists manufactured by members of the Hydraulic Hoist and Steel Dump Body Manufacturers Association places all hoists in classes depending on the torque rating in inch-pounds developed by the hoist around its hinge shaft. Also included is a table for determining the size or rating of hoist needed for any anticipated use. The Association, which represents about 75% of the Hydraulic Hoist and Steel Dump Body Industry, hopes to distribute the chart to all interested parties in the domestic and foreign markets. Make your request to **J. R. Pat Gorman, Executive Secretary, Hydraulic Hoist and Steel Dump-Body Mfrs. Assn., 1740 K St., N.W., Washington 6, D. C.**

POWER PLANTS—A new bulletin, LP-354, describes the power plant line of the Katolight Corp. in interesting sequence. The brochure describes each individual unit in considerable detail along with ratings, general features and accessories. Price lists are also included with the bulletin. You can get a copy by writing to **Katolight Corp., First Ave. at Chestnut, Mankato, Minn.**

ENGINE GOVERNORS—A 50-p catalog gives complete specifications on velocity-type governors that are used for tractors, trucks and other vehicles and mechanical governors for industrial or stationary engines. Copies of the booklet may be obtained by writing the firm.—**Hoof Products Co., 6543 S. Laramie Ave., Chicago, Ill.**

SLING—The improved Adjust A-Leg equalizing and locking sling available in a wide range of sizes is described in a new 4-p catalog now ready from **The Caldwell Co., 1830 Camp Ave., Rockford, Ill.**

AUTOCAR DIESEL—An 8-p, gate-fold book which points up all the features of the diesel engines and trucks manufactured by the Autocar Div. of the White Motor Co. Exton, Pa., is yours for the asking.

ALL-PURPOSE CONVEYOR—A flat top all-purpose conveyor for builders and contractors is described in Bulletin 54 which gives the complete story on the Marion Mule conveyor. This conveyor is available in 24-, 32- and 40-ft lengths in 8-ft sections on a 24-ft base machine. It's powered with a 4-hp gas engine or a 1½-hp electric motor with reversing starter.—**The Marion Mfg. Co., Marion, Ohio,** will be happy to send you a copy of this booklet.

How THORITE patches and THOROSEAL seals concrete structure of building and give it that new look!

Abrasive Products Company
Braintree, Massachusetts



- 1 Before patching with Thorite, loose concrete is removed and rust cleaned from reinforcing rods.
- 2 Thorite is then applied, bringing patch to surrounding surface. THORITE will not shrink.
- 3 A coat of Thoroseal is then given the patched section and all exposed concrete of similar areas. This building has been restored to its original structural lines and protected from further deterioration.

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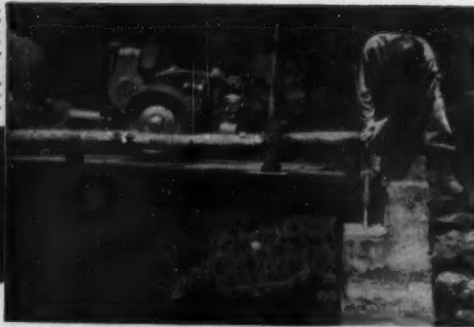


Standard Dry Wall Products, Inc.
NEW EAGLE, PENNSYLVANIA

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Delivers Double-Duty Service

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WISCONSIN-POWERED COMPRESSOR

Supplying dependable AIR-COOLED power for this P244 GH Ingersoll-Rand Air Compressor for operating a J-10 Jackhammer, engaged here in drilling light standard hole in a bridge pier, is a typical assignment for Wisconsin Engines.

Wisconsin heavy-duty engineered design and construction, plus dependable AIR-COOLING and ready adaptability to installation on practically any type of equipment requiring power components from 3 to 36 hp., are factors that make Wisconsin Engines the preferred power among both original equipment manufacturers and purchase-for-use customers.

You can't do better than to specify "Wisconsin Power" for your equipment. Descriptive and engineering data gladly supplied.



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World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN



• By modifying and re-combining our standard parts, Superior-Lidgerwood-Mundy can engineer hoists to meet your specific requirements at the lowest possible cost.

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New Advertisements

received by November 24th will appear in the December issue subject to limitations of space.

Classified Advertising Division
CONSTRUCTION METHODS & EQUIPMENT
300 West 42nd St. New York 36, N.Y.

CORE DRILLS—A new bulletin has just been issued which covers the line of LD and LID portable powered core drills. Either model is an easily transported compact core drill suitable for highway test cores, soil sampling, coal and mineral prospecting. Ask for Bulletin 21—Acker Drill Co., Scranton, Pa.

CRANE SHOVEL — A 16-p illustrated catalog describes the 1½ yd Bay City Crane-Shovel which follows the basic pattern of heavy-duty construction of other Bay City equipment, is convertible, and may be used as shovel, crane, dragline, clamshell or hoe. Ask for Catalog 70/700-A—Bay City Shovels, Inc., Bay City, Mich.

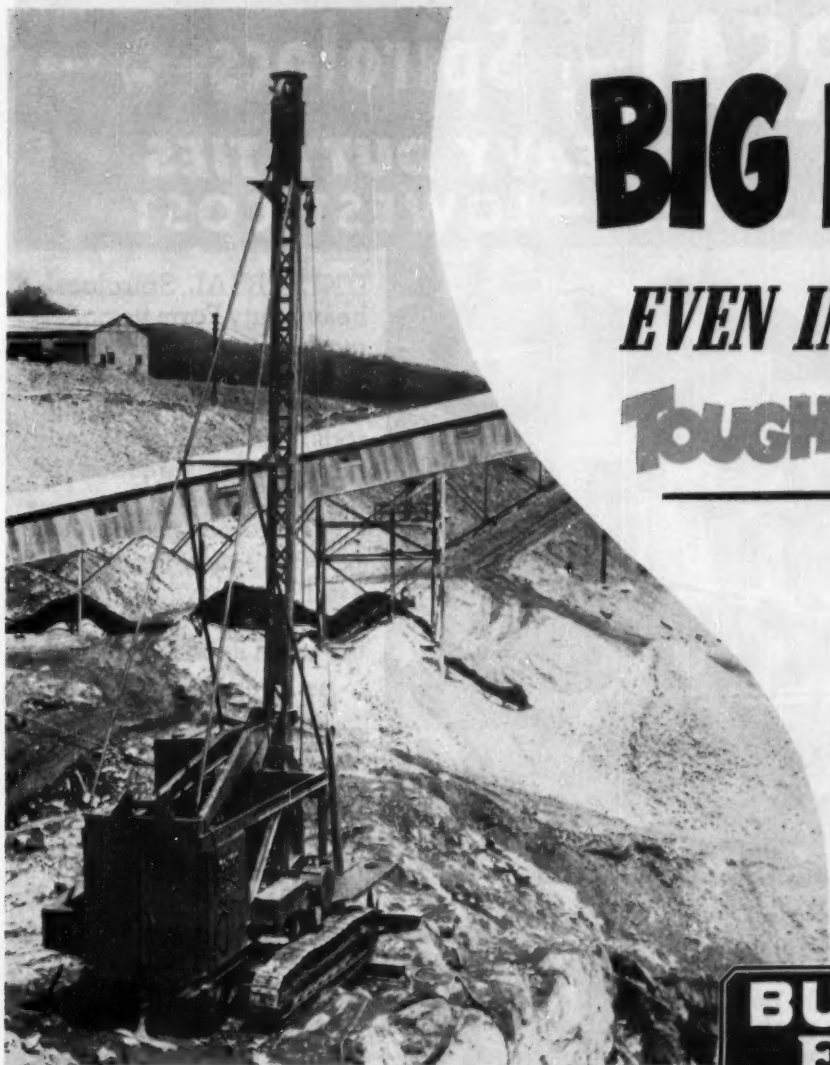
SHAFT-MOUNTED DRIVES — If you use or design machines which require input speeds between 420 and 10 rpm in the hp range between ½ and 30 hp, you will want a copy of Bulletin 7101—"Shaft Mounted Drives" by Falk. This bulletin contains complete information—design data, selection tables, dimensions, weights, installation photographs on this type of standard gear drive which offers high ratios of speed reduction in limited space. For your copy write The Falk Corporation, 3001 W. Canal St., Milwaukee 8, Wis.

ALUMINUM ROOFING HELPS—Information on Alcoa gravel stops and copings is covered in a new booklet (Bulletin 12-L-2) just released by the Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.

PORTABLE POWERED SCREEN—This portable screen speeds screening of sand and other aggregates. It is mounted on wheels and powered by an electric motor or gasoline engine. It is wheeled over the mixing box into which the fine material drops, while the larger pieces are discharged toward the end of the vibrating screen. For descriptive literature write Kent Machine Co. of Cuyahoga Falls, Ohio.

HYDRAULIC CONTROL VALVES—Dimensional data and features of Parker hydraulic directional valves for mobile equipment applications cover 1-, 2-, 3-, and 4-spool models of from 8- to 35-gpm capacity. When making your request ask for catalog file 1551A.—Industrial Hydraulics Div., The Parker Appliance Co., 17325 Euclid Ave., Cleveland 13, Ohio.

TAPPING CONCRETE PRESSURE PIPES—A handy, pocket-size, fully illustrated manual that shows how to make large taps or small service connections under pressure on concrete pipes has just been released by Price Brothers Co., 1932 E. Monument Ave., Dayton 1, Ohio.



BIG HOLES

EVEN IN THE

TOUGHEST GOING

**BUCYRUS
ERIE**

A balanced drilling motion that produces outstanding hole footage even in the toughest drilling—that's what you get with Bucyrus-Erie's big-hole 50-T and 29-T churn-type blast hole drills. Drilling speed, length of stroke, and tool weight are all coordinated to provide a concentration of maximum energy where it counts most—at the bottom of the hole.

Striking up to 55 blows per minute, these Bucyrus-Erie drills maintain a rapid, even drilling pace. With the sharp hit-and-snap-up action provided by the derrick head shock absorber,

each drilling blow effectively shatters rock. Rigid construction, big derrick capacity, and plentiful reserve power permit handling extra heavy tool strings.

For fast profitable operations, standardize on Bucyrus-Erie blast hole drills—the rigs that put down the big ones even in the toughest formations. Write for complete details on these machines for large diameter blast holes—the 50-T for 9" to 12" holes, the 29-T for 6" to 9" holes.

8854

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

UNIVERSAL Spirolocs

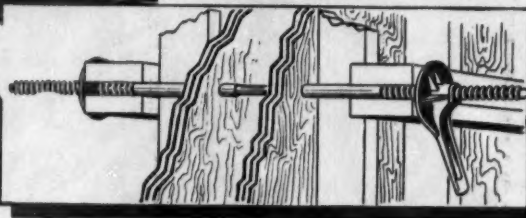
HEAVY DUTY TIES
FASTEST—SAFEST—LOWEST COST



UNIVERSAL Spirolocs—
heavy duty Form ties...*Per-
manent, reuseable equip-
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rods last indefinitely; only
inexpensive threaded tie
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Spirolocs provide fast
erection...easy stripping...
available in various time-
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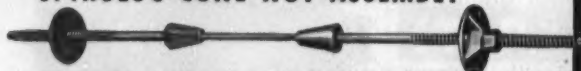
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For less money with Spirolocs

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SPIROLOC CONE NUT ASSEMBLY



The only fast acting form Tie with an
absolutely positive spreader...assures
smooth surfaced, watertight walls.

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Form Tying Accessories.



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SLIP IT ON

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BIG JOBS OF THE MONTH . . .

Continued from page 28

Lane Construction Co., 37 Colony St., Meriden, Conn. constructing 4.195 and 5.01 mi of highway for the Pennsylvania Turnpike Comm., 11 N. 4th St., Harrisburg, Pa. \$5,948,-649.

Catalytic Construction Co., 1528 Walnut St., Philadelphia, design and construct anhydrous ammonia plant at Marcus Hook, Pa. for the Sun Oil Co., 1608 Walnut St., Philadelphia. \$9,000,000.

Morrison-Knudsen Co., Inc. & Utah Construction Co., 319 Broadway, Boise, Idaho, construction of Table Rock Dam near Branson, Stone and Taney counties, Missouri, on The White River between Missouri and Arkansas for U. S. Engineers, P.O. Box 867, Little Rock, Ark. \$24,438,-742.

Burl-Co Construction Co. and Scott-Shaw Inc., Att. George Sirott, Oriental and Maple Aves., Gloucester, N.J., residential development, Cooper St., Edgewater Park, N.J. \$6,000-000.

General Electric Co., Public Service Bldg., Portland, Ore., eight main generators for The Dalles Dam, Wasco Co., Oregon, for The U.S. Engineers, Pittock Block, Portland, Ore. \$11,114,620.

S. J. Groves & Sons Co., Box 31, Montpelier, Ohio. 12.4 mi of Indiana East-West Toll Road in La Grange Co. for Indiana Toll Road Commission, 309 W. Washington St., Old Trails Bldg., Indianapolis. \$6,739,835.

V. Barletta Co., 10 Whipple Ave., Roslindale, Mass., portion of Framingham trunk sewer from Sudbury Aqueduct to Natick pumping station, Natick Boston, for Commonwealth of Massachusetts Metropolitan District Commission, Construction Division, 20 Somerset St., Boston, Mass. \$1,256,390.



BUY AND USE

CHRISTMAS SEALS

FIGHT

TUBERCULOSIS

Best way to achieve SPECIFIED DENSITY in



ROCK, SLAG, SOIL-BOUND MACADAM, GRAVEL and SAND BASE COURSES

use...

JACKSON VIBRATORY COMPACTORS!

On jobs such as this, soil-bound macadam—5 inches thick, the JACKSON MULTIPLE COMPACTOR, now more powerful than ever, achieves specified density in **JUST ONE PASS**. It is equally efficient on rock, or slag base and all other granular soils.



Quickly adaptable to widening, the JACKSON MULTIPLE COMPACTOR is shown here consolidating slag macadam base course 36 inches wide and 9 inches thick. Using three of the machine's powerful compactor units in tandem, it readily obtains specified density in **ONE PASS**.



Twin hook-up of manually guided JACKSON COMPACTORS consolidating gravel base for a large pavement repair area. These machines, used singly or in tandem, or side-by-side twin hook-ups, are exceedingly efficient for all types of granular soil base and fill compaction; also for bituminous patching and driveway construction. Operated from a trailer-mounted JACKSON POWER PLANT which may also be used for other power tools and lights.

See

your Jackson Distributor or write us for complete information on these machines.

JACKSON VIBRATORS, INC. LUDINGTON, MICH., U.S.A.



backfill problem

How Else Could You Do It?

IN JEFFERSONVILLE, INDIANA the E. H. Hughes Construction Co. had dug a 3' wide trench for a lateral sewerline to a depth of 12'—in some places 15'—to tie in to an existing sewer main. This spoilbank along the edge of a built up residential street (hidden by spoilbank in photo) presented a real backfilling problem. Because the street had to be kept open to traffic and dust raising held to the minimum, the huge spoilbank could not be filled from the street side.

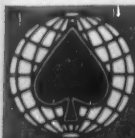
Hughes solved the backfilling problem—and at the same time compacted the filled trench—with a one-man-operated machine, the Cleveland Model 80-W. Needing minimum working space, easily able to pass under tree branches

and clear all obstructions, the compact 80-W worked off the street, travelling parallel to the trench on the opposite side from the spoilbank. The street was kept open and the dust problem minimized.

The one-man 80-W did the complete filling and compacting job simultaneously as it travelled, cleaned up and left the job ready for immediate repaving. Its low ground pressure and perfect balance on wide full crawlers practically eliminated damage to the lawns, sidewalks and drive-ways it crossed.

Because of its unique versatility the Cleveland 80-W is saving owners time and money on a wide variety of pipelaying, trench filling and trench compaction jobs.

Write for descriptive literature and specifications or get the full story on CLEVELANDS from your local distributor.



THE CLEVELAND TRENCHER CO.

"Pioneer of the Modern Trencher"

10150 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

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**"Works where
no other
scraper
can"**

**Tournapull goes between
houses, drives over streets,
sidewalks, self-loads or
loads with grader**



"Tournapull has got them all beat," says Operator Lloyd G. Hickey. "It will do heavy road work. It will self-load. And it will go into narrow spaces between houses where nothing else will go!"

Stegge Development Company, 2206 Springs Road, Vallejo, California, has built a profitable business specializing in subdivision work. Here you see how they use their versatile 28 mph D Tournapull to make this scattered "work-and-run" dirtmoving pay off.

On a typical job — leveling lots for the Tennessee Manor development in Vallejo — the "D" consistently loaded 5 pay yards of mixed topsoil and

unripped sandstone. Load time, with a grader pushing, averaged under 1 minute. Complete 2200' cycles took 5 minutes. Output averaged 55 pay yards per 55-minute hour.

Hauls rock, finish-grades

Stegge's Tournapull performed equally well on other assignments. It quickly handled rough-grading and street construction. It efficiently fin-

ish-graded between buildings. It spread topsoil for landscaping. It even replaced a dump truck for long hauls of shovel-loaded rock fill.

Supervisor R. E. Klein says, "Our D Tournapull is the most versatile dirt-moving unit we have ever used. No trailer-transport is necessary. It does a number of scattered jobs during a single day. And after streets and sidewalks are in, it still moves dirt from block to block without damage to paved surfaces."

See the 7-yard "D" in action on *your* work. Call us any time to arrange for a demonstration.



Grader easily heaps the 7-yd. "D", even in this rocky soil. Rig can also be push-loaded profitably by tractors. It also self-loads effectively in most scraper dirt.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-681-B-b



LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company



Digs Through Sticky Gumbo and Buried Stumps for 8 Sewer Laterals in 6 Hours with a Sherman Power Digger

"Do it fast." That was the order given to a large general contractor in New Orleans. Their job was to dig eight trenches, each 18 ft. long, 1½ ft. wide, and sloping from 3 ft. at one end to 7 ft. at the other. Soil? Sticky gumbo with 16 buried stumps.

Despite these conditions, a Sherman Power Digger completed the work in six hours!

This is a typical, everyday job for the Sherman. It is used for curb removal, catch basins and trenches of all kinds—electric conduits, water mains, pipe lines and so on. It is compact and easily maneuvered for close-quarter work. Light weight prevents property damage on sidewalks or close to buildings. Because it is tractor mounted, the Sherman moves quickly from job to job, often completing several projects miles apart in one day.

The Sherman Power Digger releases heavier equipment for big jobs, digs in a fraction of the time and cost of manual labor, goes up to 10 ft. below grade in mud, hardpan, shale, oiled roads, blacktop and stony ground. Initial cost is surprisingly low . . . maintenance, simple and inexpensive. Get the whole story in Bulletin U-55—today.

Designed, Engineered and
Manufactured Jointly by
SHERMAN PRODUCTS, INC.
Royal Oak, Michigan
WAIN-ROY CORPORATION
Hubbardston, Mass.

Patent No. 2,303,852
Other patents pending
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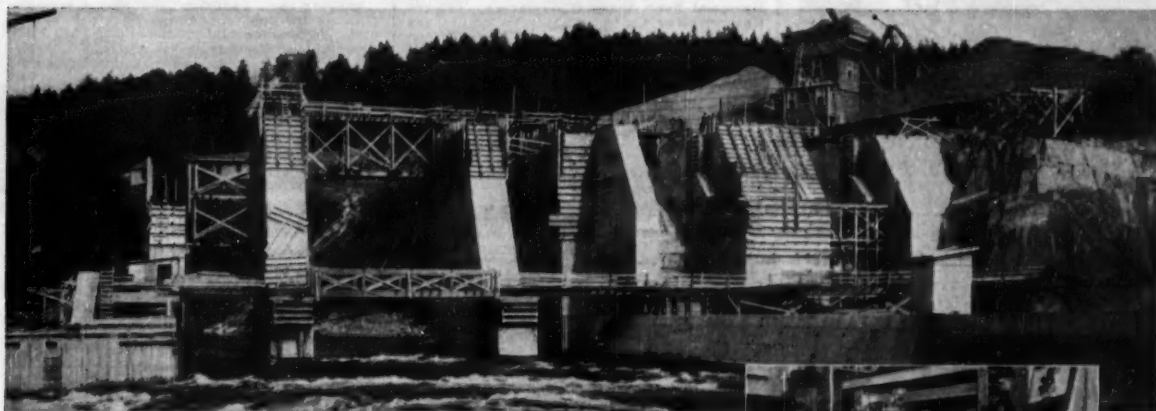
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LOOK NO HANDS!

**BUTLER
CONCRETE PLANTS
APPROACH
ROBOT AUTOMATION**

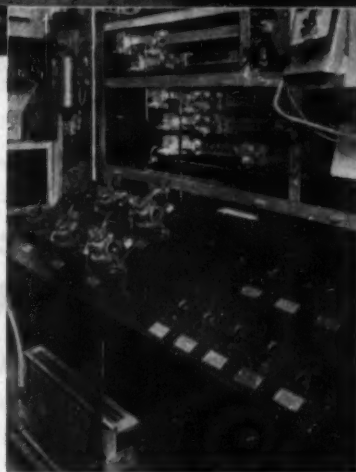


In manufacturing industries, the goal is complete automation. No human handling of materials, no humans on machines. Raw materials to finished, packaged product without the chance of human error.

And in BUTLER PLANTS that goal has virtually been achieved. For example, a BUTLER PLANT in South Carolina provides bin signals automatically interlocked with turnhead and tunnel gates. Materials supply is *always* maintained.

And BUTLER *automatic* aggregate and cement batching is already widely and profitably used. Push button remote control can be provided in a distant dispatchers office . . . Profitable time saving . . . profitable labor saving — and an *electronic* brain never forgets.

In your new BUTLER CONCRETE PLANT let the Butler Engineer design it for maximum automation. In your present Plant call in the Butler Engineer to *install* automation at the level most profitably suited for your production and your market.



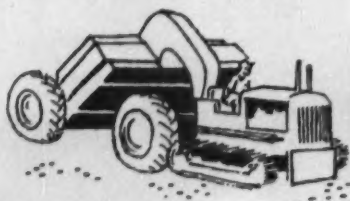
Top — Butler Central Mixing Plant on New Brunswick Dam job. One of many Butler Plants used on Canada's huge hydro-electric expansion.

Below — Butler push-button control with air operated aggregate filling and discharge gates provide labor-saving assurance of uniform batch quality.

BUTLER BIN CO.

949 Blackstone Ave.
WAUKESHA, WISCONSIN

new way to get the most out of your diesels



Install Roosa Master... the modern fuel injection pump that pays big dividends not only in performance but also in low maintenance costs.

Simple • compact • lightweight... Roosa Master offers performance-proven life, trouble-free fuel injection for all major types of high speed diesel engines... and is readily interchangeable with most existing pumps.

Because of its simplicity of design and construction, Roosa Master is extremely easy to service right in the field. Perfected after 15 years of engineering research and extensive field experience, Roosa Master is manufactured by Hartford Machine Screw Company, one of New England's leading manufacturers of precision machined products, and backed by a 75 year old tradition of integrity and dependable customer service.

For complete facts on Roosa Master write the Hartford Machine Screw Company, Hartford 2, Conn., or consult your engine manufacturer.



ROOSA MASTER

THE MODERN FUEL INJECTION PUMP

**MAKES GOOD
DIESELS BETTER**

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CONSTRUCTION METHODS AND EQUIPMENT

330 West 42nd St., New York 36 — LO 4-3000

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HOWARD T. OLSEN, Business Manager

Sales Representatives

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Philadelphia 3, 17th and Sansom Sts.

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W. D. LANIER, JR.

Cleveland 15, 1510 Hanna Bldg.

W. E. DONNELL

Chicago 11, 520 N. Michigan Ave.

KNOX BOURNE, D. J. McGRATH

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Dallas 1, First National Bank Bldg.

J. H. CASH

Los Angeles 17, 1111 Wilshire Blvd.

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CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (41)

WANTED

Construction, light equipment for use in home building, etc., wanted for our dealers overseas. Suitable for sale or rental. Exclusive agency basis. Perma-Stone International Ltd., 320 Fifth Avenue, New York 1.

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The Construction of the Brooklyn-Battery Tunnel
This is the story of the key men of the miraculous 20th century—those hardy human sandhogs who dug under water and blasted through earth and rock to build the sleek, modern tunnels we use today for fast motor and railroad traffic.
Illustrated and photos. Per copy \$1.00
Send check or money order

PATRICK J. COSTELLO
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—Allis Chalmers HD15 Diesel has performed no heavy digging. Only operated approx. 500 hrs. to compact and control coal storage pile.
Priced low for quick sale. Contact W. C. Campbell

OLD BEN COAL CORP.
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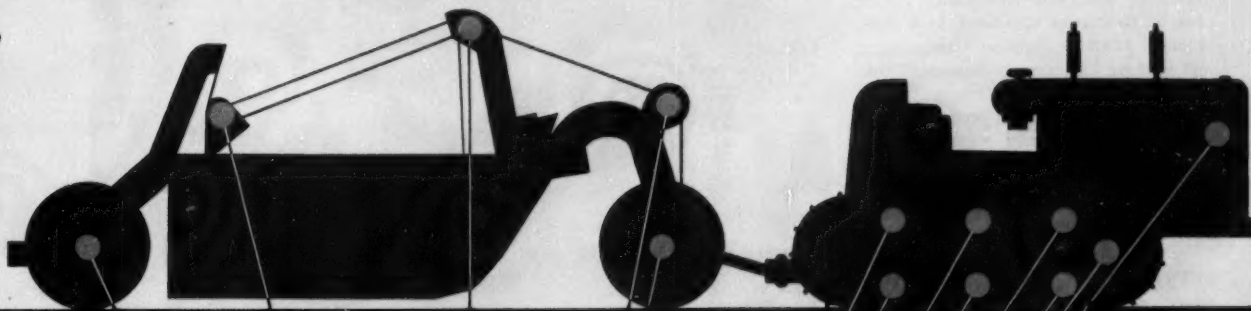
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McGraw-Hill Publishing Company, Inc.
By J. A. GERARDI, Vice Pres. & Treas.
Sworn to and subscribed before me this 14th day of September, 1954.

(SEAL) ELYA G. MARLIN
(My commission expires March 30, 1955)

now 1 grease replaces 7



NEW STANDARD LITHIUM MULTI-PURPOSE GREASE

● Here is a true multi-purpose grease that can be used *practically anywhere* on the job or in the shop. With new STANDARD Lithium Multi-Purpose Grease you can effectively lubricate all normally encountered grease-lubricated bearings with just one grease! No need for keeping old-fashioned special-grease inventories with complex dispensing equipment . . . no chance of costly application mistakes.

New STANDARD Lithium Multi-Purpose Grease is water and high-temperature resistant and can be used in mechanically and hand-operated dispensers and in grease cups. It replaces such greases as viscous lubricants, water pump grease, wheel-bearing grease, cup and fiber greases and can be used for general chassis and lubrication of a wide variety of bearings—ball, roller, plain, needle—under wet and hot operating conditions. Meets rigid requirements of wheel bearing manufacturers.

Now you can reduce grease inventories, eliminate waste, do away with costly application errors with STANDARD Lithium Multi-Purpose Grease. Ideal for fleet operators, contractors, other large-scale users of heavy automotive equipment. Call your nearby Standard Oil lubrication specialist now.



**STANDARD OIL
COMPANY (Indiana)**

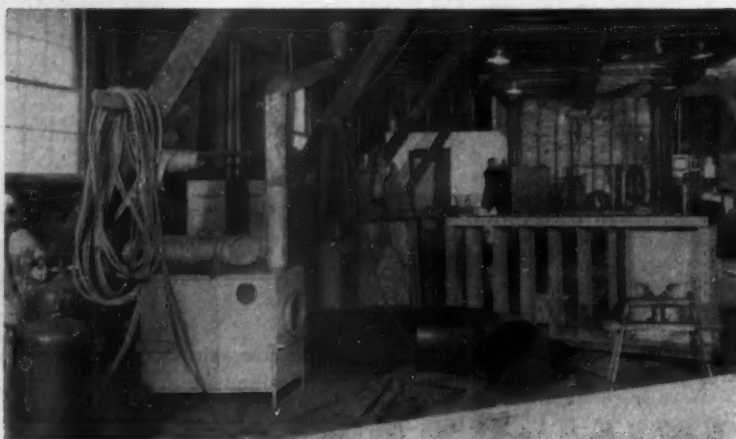
Methods Memo . . .

HIGHWAY CONSTRUCTION has grown in size and complexity. With present day deep cuts and high fills, erosion control through landscaping and seeding becomes an important consideration. But a little ingenuity and the right combination of seed, fertilizer, water and mulch can work wonders. Turn to page 56 and read how the steep, rocky slopes of the West Virginia Turnpike sprouted grass even before the pavement was laid.

SETTLING JOB DISPUTES can be a nasty and expensive business—especially when affairs drag along and finally wind up in court. But arbitration can save you time and money, eliminate bad publicity, and quickly bring your case before a board of impartial arbitrators with the technical knowledge to give a sound decision. Arbitration is available to anyone, is tops in settling contract difficulties. Read how it works, beginning on page 106.

DIESEL ENGINES won their spurs in construction long ago, because of their ability to deliver low-cost power under rough going and with relatively long life and little maintenance. The first ones were heavy, slow-speed power plants. More recently, the trend toward dieselization has accelerated in all industry, with the development of the lightweight, high-speed diesel. Cummins Engine Company estimates the percentage of dieselized equipment used by construction as follows (Engines of 100 to 600 hp): Construction and mining equipment, 90%; heavy-duty on-highway trucks, 55-60%; medium-heavy on-highway trucks, 10%. Ever higher crankshaft speeds for the newer diesels will bring more into the latter category also, it is claimed.

THE ATOMIC AGE arrived for construction recently. Duquesne Light Co. of Pittsburgh is pioneering with an atomic energy plant under construction at Shippingport, Pa. Ground was broken by President Eisenhower through remote control from his summer headquarters in Denver, Colo. Ike waved a radio-active wand near a Geiger counter which activated a pointer on a scale. Movement of the pointer closed transcontinental electrical circuits that set a waiting tractor shovel in motion on the construction site. The ground-breaking Cat No. 6 moved forward, filled its bucket, then raised and dumped the load automatically. There was no operator on or near the machine.



WINTER WINDS and snow soon will be whipping across many parts of the country again, and odd jobs will move indoors. Here is a carpentry and general maintenance shop ready to cope with the cold. It features a Herman Nelson portable space heater to heat the shop.

ANOTHER TORQUE CONVERTER probably will become better known in the construction equipment field with the acquisition by Clark Equipment Co., Buchanan, Mich., of the Torcon unit from Torcon Corp. Clark has not acquired the Torcon company or any new plant—only the torque converter patents, designs inventories and tooling.

BUYERS GET A BREAK sometimes for varying reasons. Here are two new ones. Walter P. Michaud, Lowell, Mass., plastering contractor bought a new Essick Speed Mix plaster and mortar mixer from Pesco Equipment Corp., Medford, Mass. Then Michaud received a full-price refund, got his mixer free of charge. Seems that he had purchased the 50,000th mixer made by the Essick Manufacturing Co., Los Angeles, and the maker wanted thus to celebrate the milestone—and reap some incidental publicity.

Trailmobile Inc., of Cincinnati, large manufacturer of truck-trailers, is so confident that business will remain good, or get better, that it will refund the full purchase price of a used trailer, bought now and used all winter, on the purchase of a new trailer next spring. The buyer simply turns in the used model for full credit on the new purchase.

PEOPLE ARE CURIOUS. Sometime ago, contractor Christian P. Sorenson, of Baltimore, Md., found he was up against a brick wall when he tried to hire bricklayers to complete a local

contract. He tried the usual sources; contacting the union, employment agencies, and even ran ads in the local paper. Results were zero. Other local contractors also were looking for bricklayers and consequently outbidding each other in inducements and wages. The bricklayer was a wanted man in Baltimore.

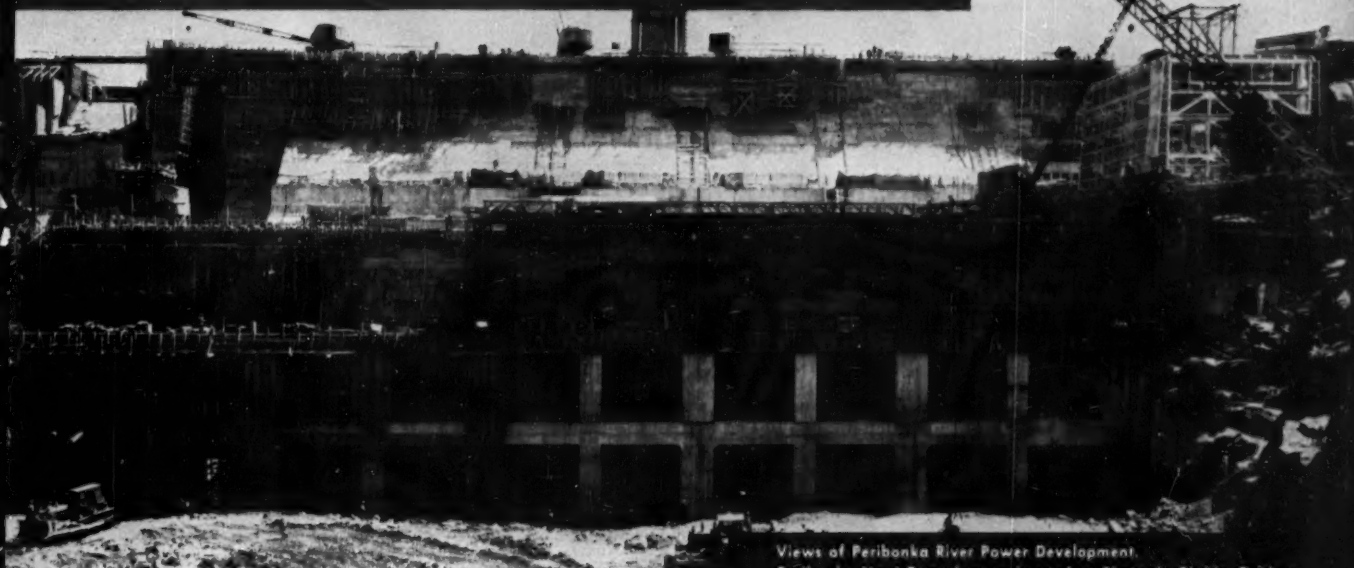
Finally, in desperation, Mr. Sorenson inserted a small ad in the newspaper which read: "Wanted, left-handed bricklayers only. Come ready for work."

The next morning 35 bricklayers showed up, presumably all left-handers. After they were hired, they naturally wanted to know why Mr. Sorenson wanted left-hand bricklayers. His answer? He just "preferred" left-handed bricklayers. According to Sorenson, of the 35 bricklayers hired, only 3 were left-handers. The only "extra" Contractor Sorenson offered was curiosity.

CITATIONS for outstanding work in promoting safety in small business were awarded to the Associated General Contractors and the Portland Cement Association by the National Safety Council at its Chicago Congress in October.

Eleven groups were honored by the award which gives recognition to associations for the excellence of their safety services and for contributions to the reduction of injuries in their industries. Taken into consideration are accident prevention activities such as publicity, safety conferences, contests and publication of technical material.

rigid concrete specifications here...



Views of Peribonka River Power Development.
Peribonka No. 1 Powerhouse—located at Chute du Diable, Québec.
Owner: The Aluminum Company of Canada, Ltd., Montreal, Québec.
Constg. & Des. Engrs.: Shawinigan Engineering Co., Ltd.;
Contr.: Fraser-Brace Engineering Co., Ltd., Montreal.

engineers of Peribonka Power Plants employed **POZZOLITH*** to help meet requirements

Specifications for these important projects were rigid and exacting. Several types and classes of concrete were involved. Engineers insisted on adequate flow and workability without excessive bleeding or segregation.

Field tests showed that despite problems introduced by air-entrapping sands, Pozzolith with its adaptations facilitated production of concrete of the specified qualities, and at a cost far less than by other known methods.

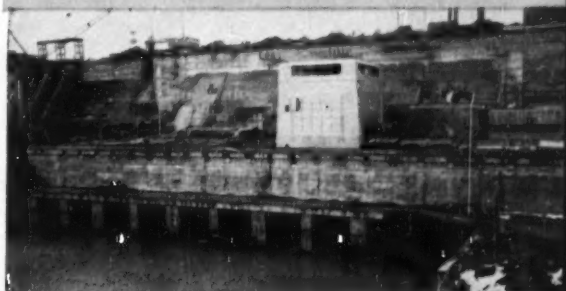
Pozzolith has proved to be an effective aid in producing excellent results and important savings on major jobs across America.

We would welcome an opportunity to work with you to help obtain similar results on your jobs. More details on these and other hydraulic structures in Master Builders Reporter No. 3—48 pages, illustrated. Copy on request.

* **POZZOLITH** ... reduces unit water content up to 15% for a given placeability, and fully complies with the water-cement ratio law. Adaptations of Pozzolith permit rigid control of entrained air. Produced in three standard formulations—High Early Pozzolith, Normal Pozzolith and Low Heat Pozzolith—to give the results required under varying job conditions.



Peribonka No. 1 Spillway—located at Chute du Diable, Québec.
Owner: The Aluminum Company of Canada, Ltd.; Engineers and Contractor same as Peribonka No. 1 Powerhouse.



Peribonka No. 2 Powerhouse—located at Chute a la Savane, Québec. Owner and Engineers same as No. 1 Project. Contr.: Pentagon Construction Co., Ltd., Montreal.

The

MASTER



BUILDERS



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Subsidiary of American-Marietta Company

Cable Address: Master-Bldg., New York

CARBIDE INSERT? or MULTI-USE?



LOCATION: Clarksville, Tenn.

OPERATING CONDITIONS: Drilling headings in limestone.

Clarksville Stone Co. gets lowest cost per foot of hole with TIMKEN® multi-use rock bits

HEADINGS are drilled at rock bottom cost in this Clarksville, Tennessee, limestone mine. The Clarksville Stone Company uses Timken® multi-use rock bits.

Timken multi-use bits will give *you* the same savings in ordinary ground. With correct and controlled reconditioning, they give the lowest cost per foot of hole when full increments of steel can be drilled.

But they may not be the best answer for *all* your drilling problems!

Timken carbide insert bits give you the highest speed when ground is hard and abrasive. They're the most economical for constant gage holes, small diameter blast holes and extremely deep holes.

Timken multi-use and carbide insert bits save time when your drillers change bits. They're interchangeable in the same thread series. And dozens of different Timken bits fit the same drill steel. Your men can change bits quickly, easily as the ground changes—right on the job.

To find out which bit type will cut your drilling costs the most, call the Timken Rock Bit Engineering Service.

Both Timken multi-use and carbide insert bits are made from electric furnace Timken fine alloy steel. They have special shoulder unions that protect threads from drilling impact. For more information, write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



Timken threaded
multi-use rock bit



Timken threaded
carbide insert rock bit

*your best bet
for the best bit
... for every job*

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